

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

MICROSOFT CORPORATION,
Plaintiff,

v.

ALCATEL-LUCENT ENTERPRISE and
GENESYS TELECOMMUNICATIONS
LABORATORIES, INC.
Defendants.

C.A. No. 07-090-SLR

PUBLIC VERSION

**DECLARATION OF THOMAS L. HALKOWSKI IN SUPPORT OF
MICROSOFT'S OPENING BRIEF ON CLAIM CONSTRUCTION**

I, Thomas L. Halkowski, declare:

1. I am a Principal of Fish & Richardson P.C. ("F & R"), counsel of record in this action for Plaintiff Microsoft Corporation ("Microsoft"). I am a member of the Bar of the State of Delaware and of this Court. I have personal knowledge of the matters stated in this declaration and would testify truthfully to them if called upon to do so.

2. A true and correct copy of the Joint Claim Construction Chart, is attached as Exhibit 1.

3. A true and correct copy of United States Patent No. 6,421,439 is attached as Exhibit 2.

4. A true and correct copy of United States Patent No. 6,430,289 is attached as Exhibit 3.

5. A true and correct copy of United States Patent No. 6,263,064 is attached as Exhibit 4.

6. A true and correct copy of United States Patent No. 6,728,357 is attached as Exhibit 5.

7. A true and correct copy of excerpts from the August 28, 2007 Confidential Deposition Transcript of Henry-Hyde Thomson, taken in the course of the ITC investigation, is attached as Exhibit 6.

8. A true and correct copy of excerpts from the April 18, 2008 Confidential Expert Report of Henry Hyde-Thomson Regarding Alcatel Lucent Enterprise's Non-Infringement of U.S. Patent Nos. 6,263,064, 6,728,357, 6,430,289 and 6,421,439 In Rebuttal To The Expert Reports of Dr. William H. Beckmann, is attached as Exhibit 7.

9. A true and correct copy of excerpts from the October 12, 2008 and October, 15, 2008 Hearing Transcripts from the ITC investigation is attached as Exhibit 8.

10. A true and correct copy of excerpts from the March 28, 2008 Expert Report of Mr. Henry Hyde-Thomson Regarding Invalidity and Materiality, is attached as Exhibit 9.

11. A true and correct copy of excerpts from a Unified Messaging Presentation bearing production numbers MSAL 05059555 – 05059557 and an Introduction to Unified Messaging and Design for Voice Session 2003 bearing production numbers MSAL 05059589 is attached as Exhibit 10.

12. A true and correct copy of excerpts from the prosecution history of United States Patent No. 6,263,064 is attached as Exhibit 11.

13. A true and correct copy of excerpts from the Expert Report of Beckmann, Ph.D., is attached as Exhibit 12.

14. A true and correct copy of excerpts from the prosecution history of United States Patent No. 6,430,289, is attached as Exhibit 13.

15. A true and correct copy of excerpts from the prosecution history of United States Patent No. 6,421,439 is attached as Exhibit 14.

16. I declare under the penalty of perjury that the foregoing is true and correct.

Dated: May 9, 2008

/s/ Thomas L. Halkowski

Thomas L. Halkowski

CERTIFICATE OF SERVICE

I hereby certify that on May 16, 2008, I electronically filed with the Clerk of Court the attached **PUBLIC VERSION – DECLARATION OF THOMAS L. HALKOWSKI IN SUPPORT OF MICROSOFT’S OPENING BRIEF ON CLAIM CONSTRUCTION** using CM/ECF which will send notification of such filing to the following individuals:

Jack B. Blumenfeld
Maryellen Noreika
Richard John Bauer
MORRIS, NICHOLS, ARSHT & TUNNEL LLP
1201 North Market Street
Wilmington, DE 19899-1347
jblumenfeld@mnat.com
mnoreika@mnat.com
rbauer@mnat.com
(Also served via hand delivery)

I also certify that copies were caused to be served on May 16, 2008 upon the following individuals via electronic mail:

Steven C. Cherny
Karen Y. Tu
Clement J. Naples
LATHAM & WATKINS LLP
885 Third Avenue, Suite 1000
New York, NY 10022
steven.cherny@lw.com
karen.tu@lw.com
clement.naples@lw.com

David A. Nelson
Alan Devlin
Brett M. Doran
LATHAM & WATKINS LLP
Sears Tower, Suite 5800
Chicago, IL 60606
david.nelson@lw.com
alan.devlin@lw.com
brett.doran@lw.com

Michael J. Schallopp
LATHAM & WATKINS LLP
140 Scott Drive
Menlo Park, CA 94025
michael.schallopp@lw.com

Susan S. Azad
LATHAM & WATKINS LLP
633 West Fifth Street, Suite 4000
Los Angeles, CA 90071
susan.azad@lw.com

/s/ Thomas L. Halkowski

Exhibit 1

**UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE**

MICROSOFT CORP.,
Plaintiff,

v.

ALCATEL-LUCENT ENTERPRISE
and
GENESYS TELECOMMUNICATIONS
LABORATORIES, INC.,
Defendants.

Civil Action No. 07-090-SLR
Hon. Sue L. Robinson

Jury Trial Demanded

JOINT CLAIM CHART

Per the Court's scheduling order, the parties submit the following joint claim chart outlining the terms for which there is a claim construction dispute. At issue are three terms in the '439 patent, four in the '289 patent, and seven in the '357 and '064 patents. For convenience, those terms, as well as the parties' proposed constructions, appear below.

'439 patent			
Term	Appears In	MS Proposed Constr.	Defs.' Proposed Constr.
"telephone network"	All asserted claims	"network for carrying telephony information"	"network for carrying telephony information originated by telephones"
"computer network"	All asserted claims	"network for carrying digital data"	"network for carrying digital data originated by computers"
"current activity of subscribers on the computer network or according to current activity of the user on the computer network"	All asserted claims	"current status of subscribers on the computer network or according to current status of the user on the computer network"	"whether the calling party is present on the computer network or the called party is present on the computer network"
"the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call"	Claims 1, 2 and 9	<i>The parties agree to the following construction:</i> "hardware or software that accesses the user-selectable criteria in the one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call"	

'289 patent			
Term	Appears In	MS Proposed Constr.	Defs.' Proposed Constr.
"telephone network"	All asserted claims	"network for carrying telephony information"	"network for carrying telephony information originated by telephones"
"computer network"	All asserted claims	"network for carrying digital data"	"network for carrying digital data originated by computers"
"monitoring activity of a user computer"	All asserted claims	<i>Phrase does not require construction.</i> <i>If construction is required:</i> "monitoring the status of a user computer"	"determining whether a called party's computer is active or idle"
"at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party"	All asserted claims	<i>Phrase does not require construction.</i> <i>If construction is required:</i> "receiving at the computer network information from the telephone network that a telephone call from a first party to a second party has been initiated"	"receiving at the computer network an indication from the telephone network that a first party requests to set up a telephone call with a second party prior to the time the call is placed by the first party"

'064 and '357 patents			
Term	Appears In	MS Proposed Constr.	Defs.' Proposed Constr.
“unified messaging system”	All asserted claims	“system that allows messages of a data-centric network and a telephony-centric network to be received, stored, retrieved, and forwarded without regard to the communication devices or networks employed for the transmission of the messages (<i>i.e.</i> , in a coordinated manner)”	“system that allows messages of a data-centric network and a telephony-centric network to be received, stored, retrieved, and forwarded to the communication devices or networks employed for the transmission of the messages”
“communication options”	All asserted claims	“settings that control how communication services will be handled”	“parameters associated with specific types of communication services”
“[first/second] enable option for enabling or disabling the [first/second] communication service”	Claims 1, 3, 8, 9 and 11 of the '064 patent; claims 1, 6 and 17 of the '357 patent	“communication option that controls the extent to which a communication service is implemented”	“an option that allows a subscriber to turn on or off a communication service”
“a single graphical menu for displaying said communication options for each of said communication services at the same time”	All asserted claims	“a single graphical menu for displaying at least a first communication service and option and a second communication service and option at the same time”	“one graphical menu that shows all of the communication options associated with the subscriber's communication services”
“audibly representing said communication options to one of said telephones using said telephony server, when said subscriber employs said one of said telephones	Claim 1 of the '357 patent;	“audibly representing communication options pertaining to at least two communication services to a telephone using said telephony server, when a subscriber employs one of the telephones to access the computer-implemented control center”	“audibly representing the same options available through the graphical menu to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center”

'064 and '357 patents			
Term	Appears In	MS Proposed Constr.	Defs.' Proposed Constr.
to access said computer-implemented control center"			
"an audible representation of said communication options capable of being provided to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center"	Claim 17 of the '357 patent	"an audible representation of communication options pertaining to at least two communication services capable of being provided to one of the telephones, using said telephony server, when a subscriber employs one of the telephones to access the computer-implemented control center"	"an audible representation of the same options available through the graphical menu to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center"
"telephony server being configured to audibly represent said communication options to said telephone when said subscriber employs said telephone to access said computer-implemented control center"	All asserted claims of the '064 patent	"telephony server being configured to audibly represent communication options pertaining to at least two communication services to a telephone when the subscriber employs said telephone to access the computer-implemented control center"	"a telephony server that represents the same communication options that are available through the single graphical menu"

Dated: May 2, 2008

Respectfully submitted,

MICROSOFT CORPORATION

ALCATEL-LUCENT ENTERPRISE and
GENESYS TELECOMMUNICATIONS
LABORATORIES, INC.

By its attorneys,

By their attorneys,

/s/ Thomas L. Halkowski
Thomas L. Halkowski (#4099)
FISH & RICHARDSON P.C.
919 N. Market Street, Suite 1100
P.O. Box 1114
Wilmington, DE 19899-1114
Tel: (302) 652-5070
Fax: (302) 652-0607
E-Mail: halkowski@fr.com

/s/ Jack B. Blumenfeld
Jack B. Blumenfeld (#1014)
Maryellen Noreika (#3208)
MORRIS, NICHOLS, ARSHT & TUNNELL
LLP
1201 N. Market Street
P.O. Box 1347
Wilmington, DE 19899-1347
Tel: (302) 658-9200
E-mail: jblumenfeld@mnat.com
E-mail: mnoreika@mnat.com

Exhibit 2

(12) **United States Patent**
Liffick

(10) **Patent No.:** **US 6,421,439 B1**
(45) **Date of Patent:** **Jul. 16, 2002**

(54) **SYSTEM AND METHOD FOR USER AFFILIATION IN A TELEPHONE NETWORK**

6,005,870 A * 12/1999 Leung et al. 370/466
6,041,108 A * 3/2000 Brewster et al. 379/196

(75) Inventor: **Stephen Mitchell Liffick**, Seattle, WA (US)

* cited by examiner

(73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

Primary Examiner—Ahmad F. Matar

Assistant Examiner—Benny Q. Tieu

(74) *Attorney, Agent, or Firm*—Workman, Nydegger, Seeley

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(57) **ABSTRACT**

A telecommunication system combines telephone technology and Internet technology to establish one or more user-specified affiliation lists. The affiliation lists are stored on the Internet and are accessible by the user and by the telecommunication portion of the system. The affiliation lists are used to process incoming calls to the user's destination telephone number. A central office switch receives the call being directed to the destination telephone number and uses a communication link with the Internet to access the user's affiliation lists. The incoming call is processed in accordance with the user-specified rules in the affiliation lists. The user may accept all incoming calls, no incoming calls, or incoming calls only from specified parties. The call processing rules may be readily edited by the user and can also include alternative call processing rules that vary in accordance with the time of day or with the user's personal desires.

(21) Appl. No.: **09/275,689**

(22) Filed: **Mar. 24, 1999**

(51) Int. Cl.⁷ **H04M 3/42; G06F 9/46**

(52) U.S. Cl. **379/211.02; 379/201.02; 709/328**

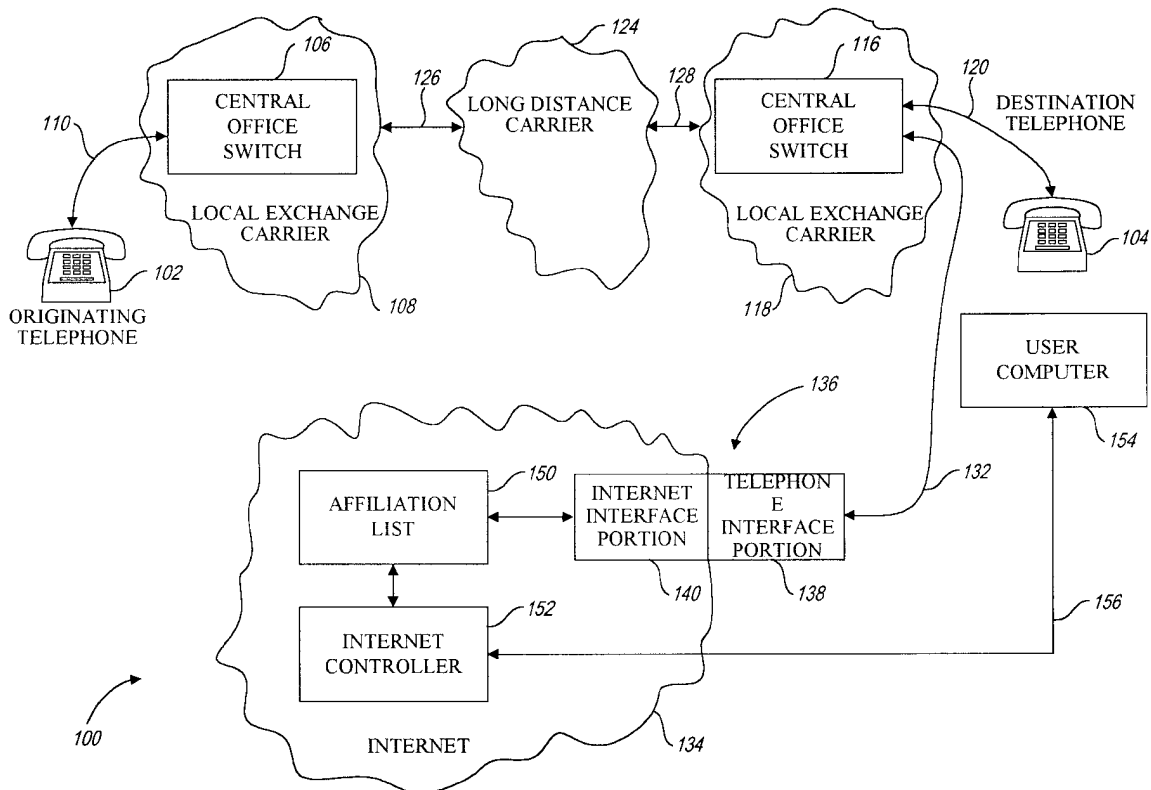
(58) **Field of Search** 379/201.01, 201.02, 379/201.03, 188, 196, 197, 198, 199, 200, 210.02, 210.03, 211.01, 211.02, 900; 370/352; 709/311, 312, 320, 328

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,329,578 A * 7/1994 Brennan et al. 379/211.03

51 Claims, 8 Drawing Sheets



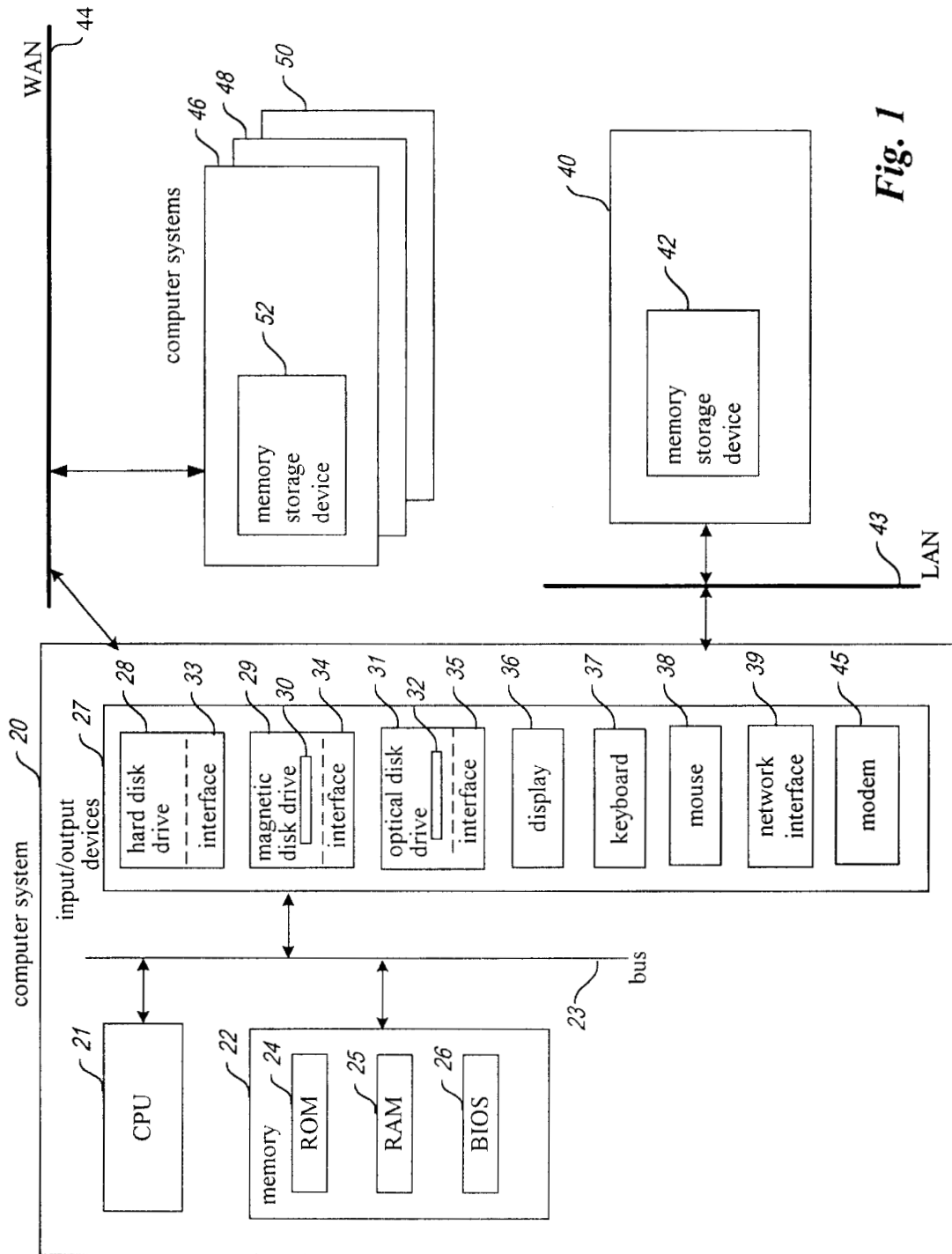
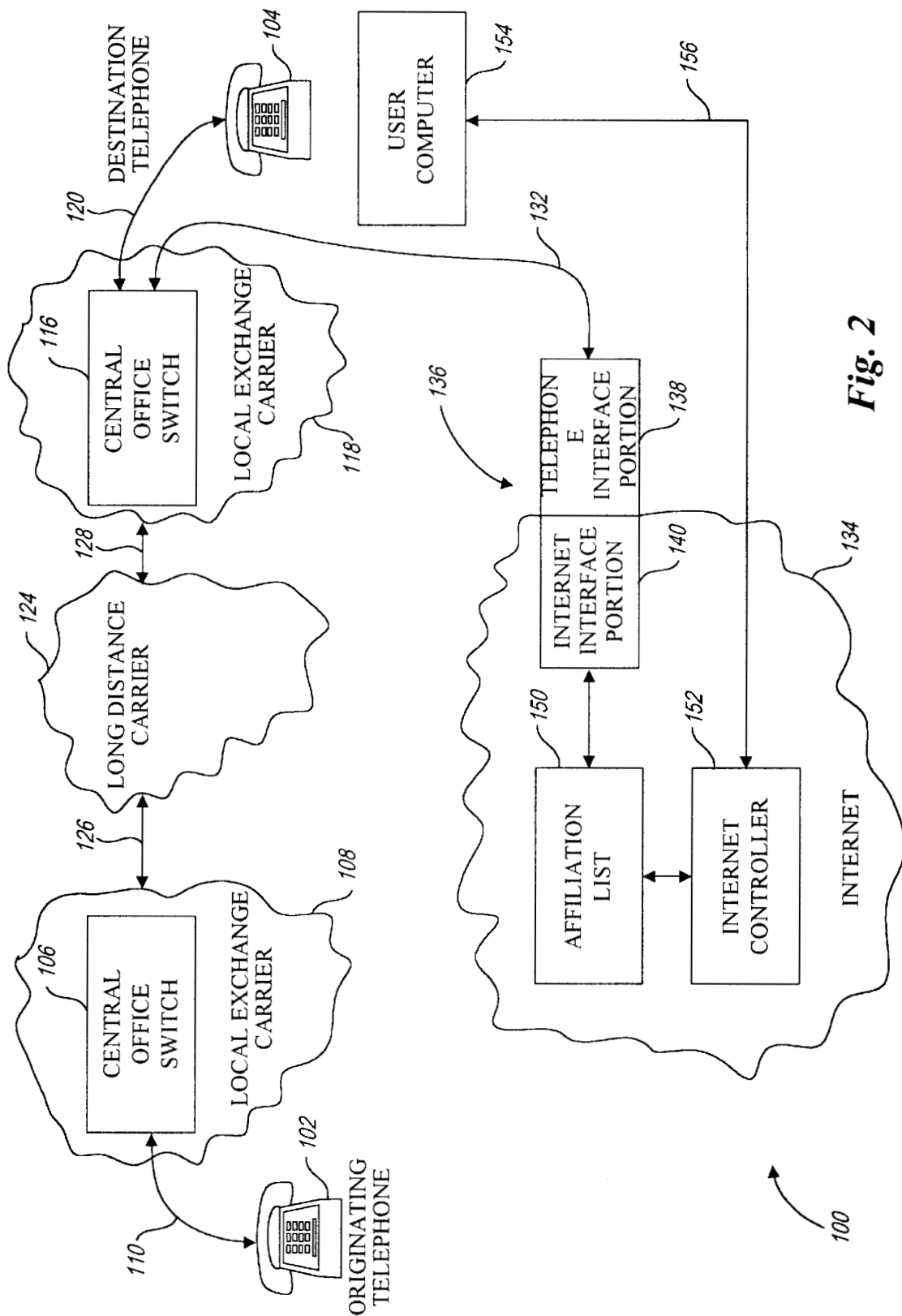


Fig. 1



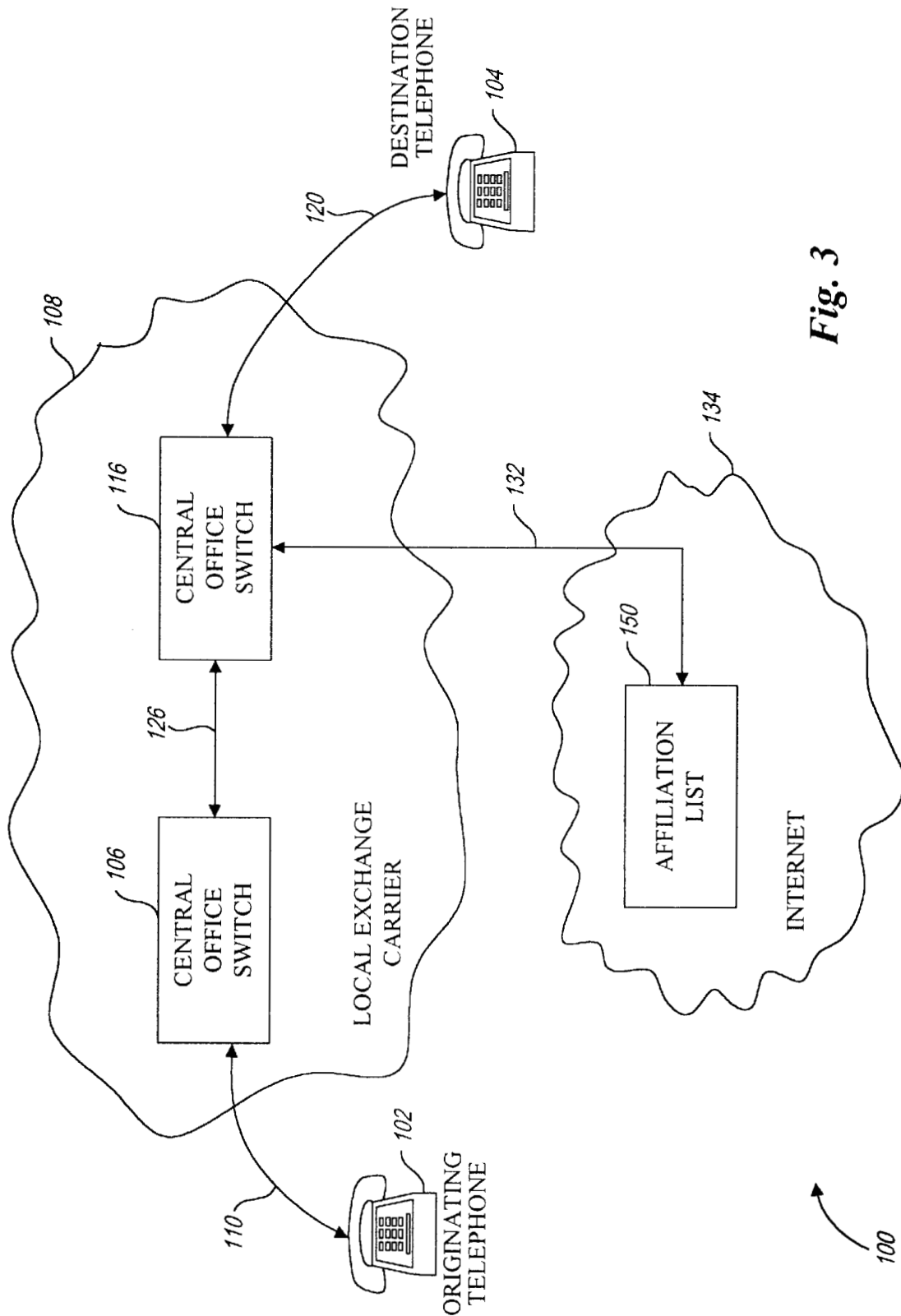


Fig. 3

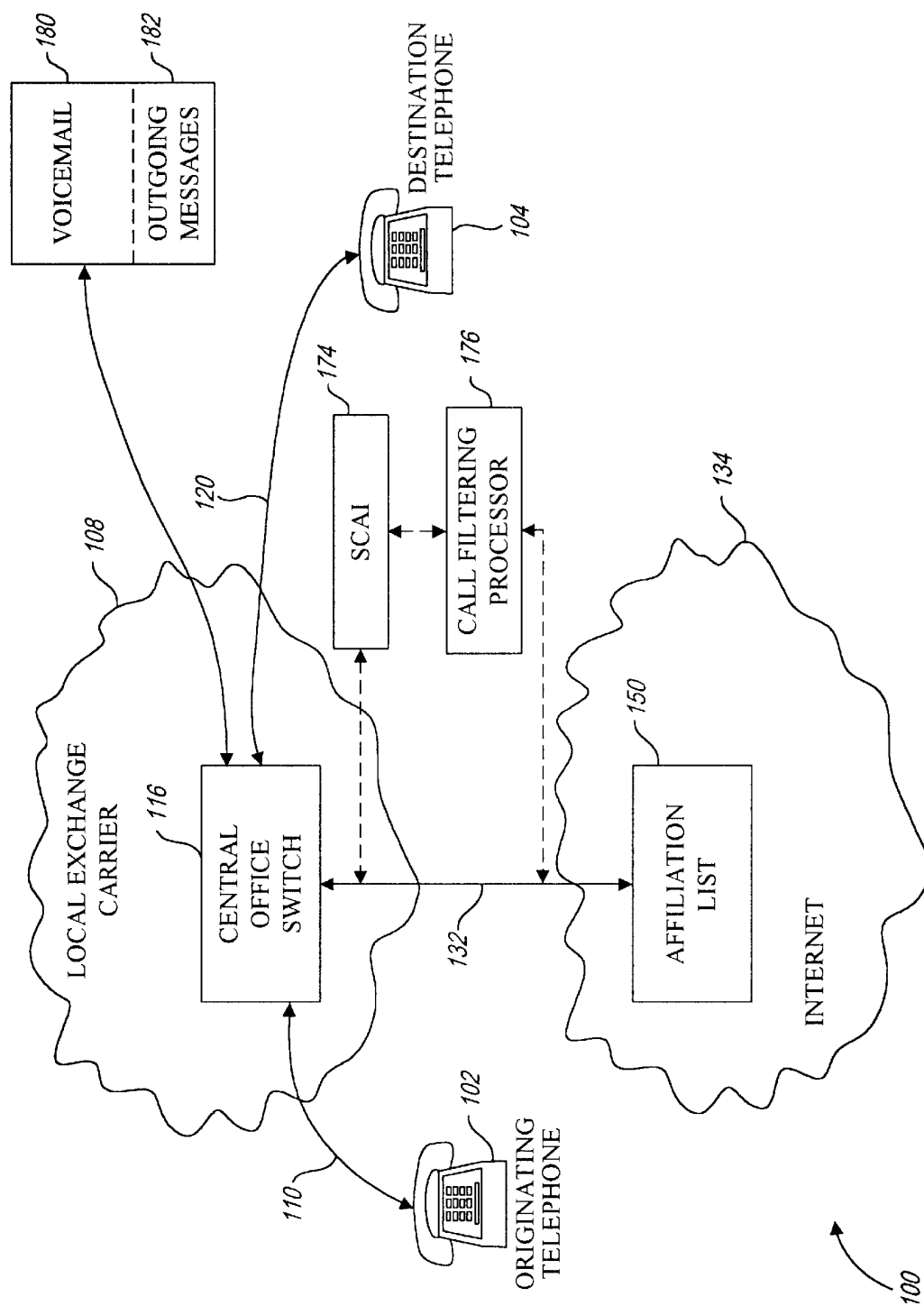


Fig. 4

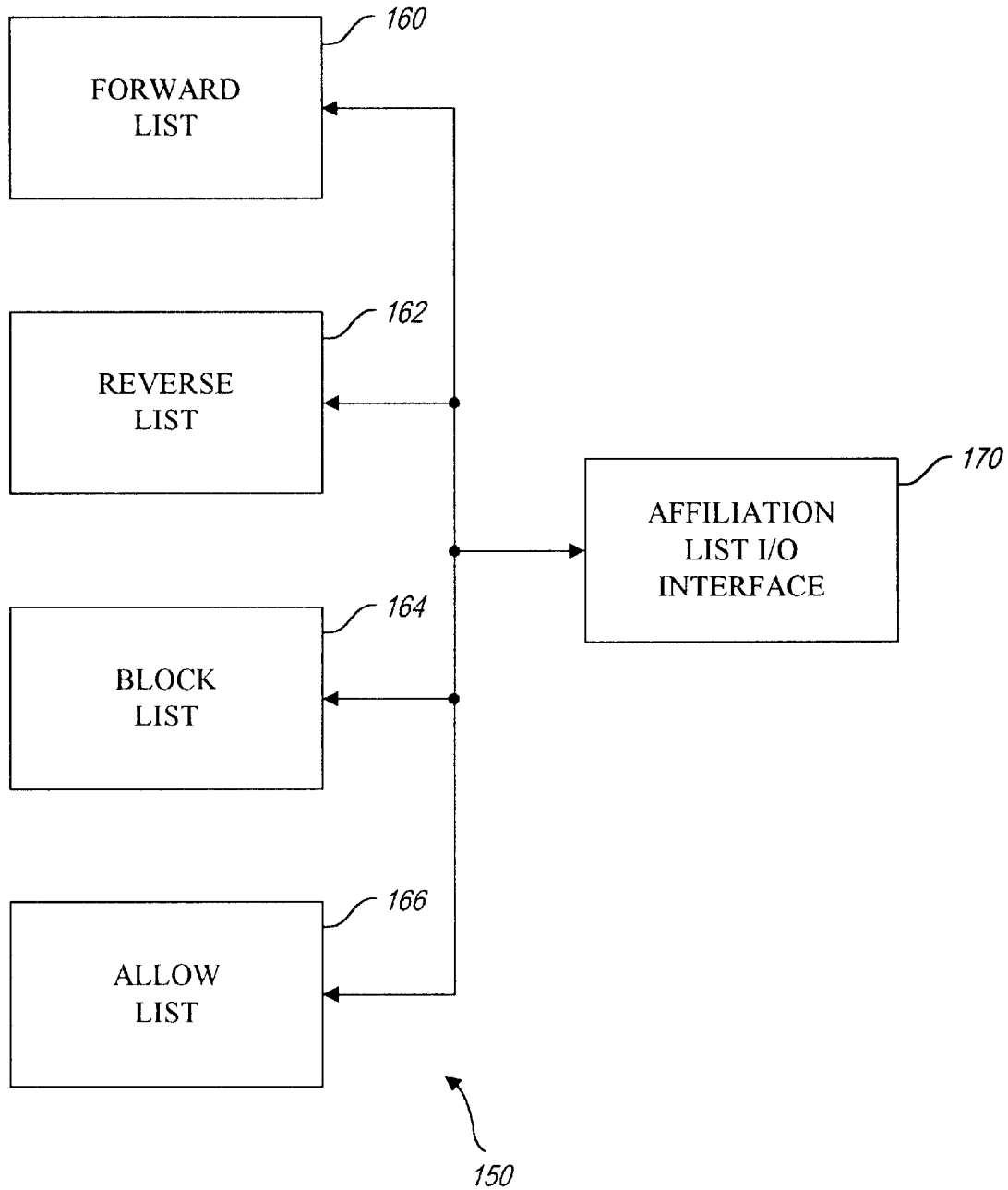


Fig. 5

Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
.	
.	
.	
.	
.	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
.	
.	
.	
.	
.	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239

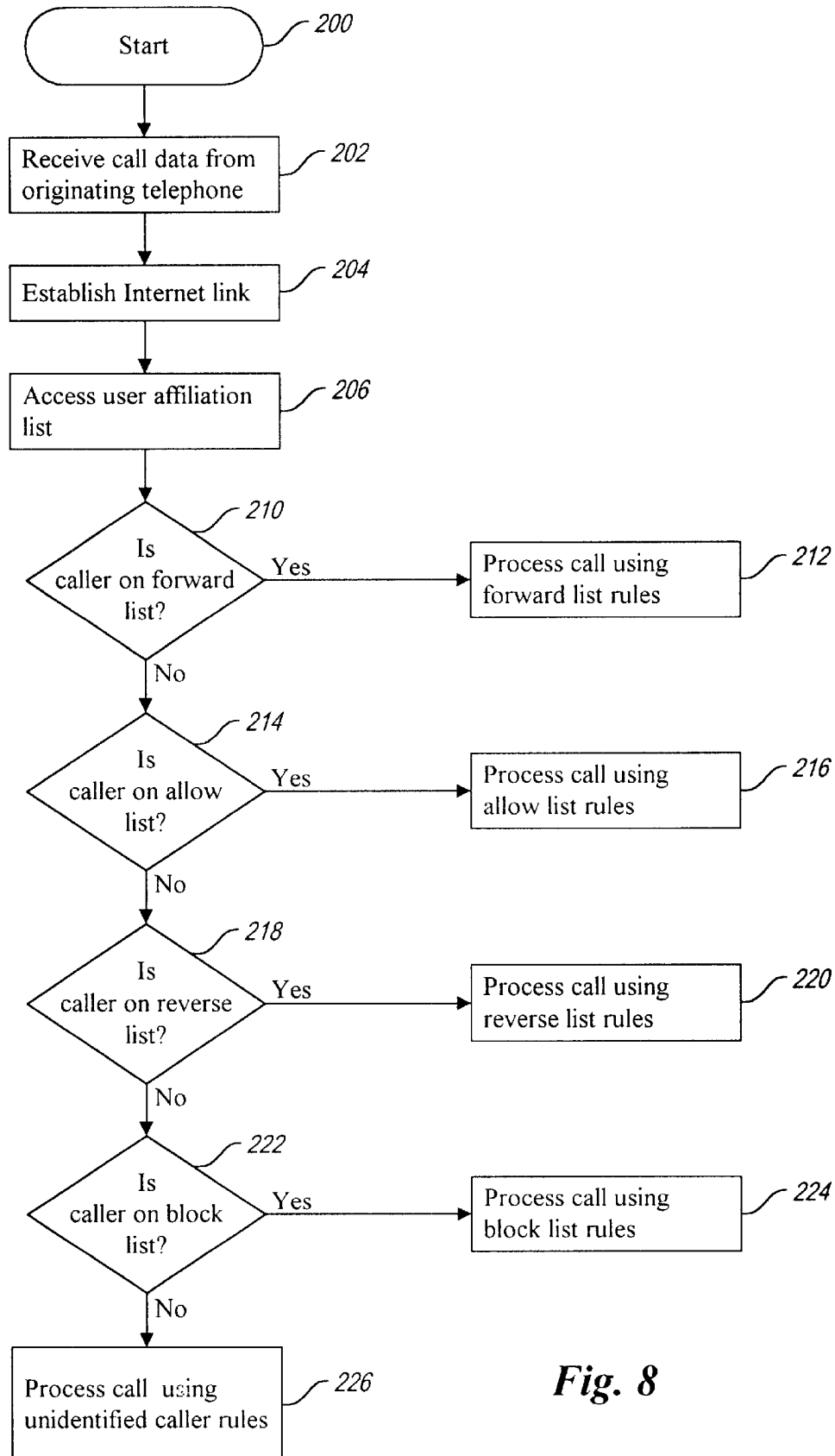
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Fig. 6

Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
Status	Allowed
.	
.	
.	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
Status	Blocked
.	
.	
.	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239
Status	Conditional
Phone 1	- Allowed
Phone 2	- Allowed 9:00 a.m. - 11:30 a.m.
Phone 3	- Blocked

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Fig. 7

**Fig. 8**

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SYSTEM AND METHOD FOR USER AFFILIATION IN A TELEPHONE NETWORK

TECHNICAL FIELD

The present invention is directed generally to telecommunications and, more particularly, to a system and method for user selection of individual affiliations in a telephone network.

BACKGROUND OF THE INVENTION

Advances in telecommunication technology provide a user with a broad variety of communication options. For example, advances in telephone communication, including wireless telephone and cellular telephone, allow almost instantaneous communication between virtually any two locations on earth. Telephone service providers typically offer wide range of options, such as voice mail, caller identification, call waiting, call forwarding, three-way calling, and the like. The telephone service subscriber can customize their own telecommunications service with the selection of one or more options.

Despite these advances, the user is still limited in determining with whom the user wishes to speak and when the user wishes to speak with certain parties or, at the user's option, not speak with certain parties. Although caller identification (ID) can identify the calling party, caller ID does not always correctly identify the caller. For example, if the number identification data is not transmitted along with the call, the caller ID device indicates that caller data is "unavailable." In addition, the user must still respond to the ringing telephone and view the caller identification box to determine whether or not to answer the telephone. Thus, existing telephone technologies do not always provide user with the desired degree of control over incoming calls.

Therefore, it can be appreciated that there is a significant need for system and method to control incoming calls to a user's telephone. The present invention provides this and other advantages as will be apparent from the following detailed description and accompanying figures.

SUMMARY OF THE INVENTION

A system to specify user-selectable criteria for call processing is implemented on a conventional telephone system, such as a public switched telephone network (PSTN). The user-specified call processing criteria is stored on a network that is accessible by the user for data entry and/or editing, and is also accessible by the PSTN to determine whether call processing criteria exists for the particular caller. The Internet provides a readily available data structure for storage of the user-selectable call processing criteria. The user can establish a database stored on the Internet in association with the user's telephone number and indicating the user-selectable call processing criteria for one or more potential callers.

The caller may be identified by caller identification data, such as automatic number identification (ANI). Based on the destination telephone number and the caller identification data, the PSTN accesses the Internet and examines an affiliation list corresponding to the destination telephone number. If the caller identification data is present in the affiliation list, the call may be processed in accordance with the user-specified criteria for that particular caller.

The user (i.e., the called party) can specify user-selectable call processing criteria for all incoming calls, incoming calls from selected callers, and may further apply conditional

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criteria based on user preferences. For example, the user may select all calls during certain times of the day, calls from selected parties during other specified times of the day, and no calls during other times of the day. The user-selectable call processing criteria may be readily edited by the user and may be applied to multiple phone numbers associated with a particular caller.

The system may be readily implemented on current telephone systems with no significant modifications. For example, the system may apply the user-specified call processing criteria at the central office switch to which the destination telephone is coupled. All call processing prior to arrival at that central office switch is performed in accordance with conventional telecommunication techniques and standards. When a call arrives at the central office switch coupled to the destination telephone, the central office switch does not immediately establish a communication link with the destination telephone, but accesses the user-specified call processing criteria on the Internet and applies the call processing criteria. If the call is allowed, the central office switch establishes a communication link with the destination telephone in a conventional fashion to complete the telephone call. If the call is not allowed, the central office switch will not process the call, and may generate a busy signal to indicate that the user is unavailable.

The system may also be implemented at other points in the telecommunication network, such as a central office switch at the originating telephone. In addition, the user-specified call processing criteria may be stored on other forms of networks that are accessible to both the user (i.e., the called party) and the telecommunication system.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a computer system that includes components to implement the system of the present invention.

FIG. 2 is a functional block diagram outlining the operation of the present invention.

FIG. 3 is a functional block diagram of an alternate telecommunications configuration implementing the present invention.

FIG. 4 is a functional block diagram of another alternative telecommunications configuration implementing the present invention.

FIG. 5 is a functional block diagram providing details of the affiliation list of the system of FIG. 2.

FIG. 6 illustrates sample data provided in the list of FIG. 5.

FIG. 7 illustrates additional sample data provided in the list of FIG. 3.

FIG. 8 is a flowchart illustrating the operation of the system of FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

Existing telephone technology does not provide the telephone subscriber with a technique for controlling access to the user's telephone. Features such as caller ID identify the caller, but do not control access to the user's telephone. Thus, the conventional telephone system forwards the user to extreme options. The user may answer all incoming calls or may choose not to answer any incoming calls. However, the present invention provides selective options in between these two extremes. The present invention combines telephone technology with Internet technology to allow the user to "filter" incoming calls based on user-selected criteria. In

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particular, the user may establish a series of lists, stored on the Internet in association with the user's telephone, to filter incoming calls and thereby control access to the user's telephone.

FIG. 1 and the following discussion are intended to provide a brief, general description of a suitable computing environment in which the invention may be implemented. Although not required, the invention will be described in the general context of computer-executable instructions, such as program modules, being executed by a personal computer. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with other computer system configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, and the like. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

With reference to FIG. 1, an exemplary system for implementing the invention includes a general purpose computing device in the form of a conventional personal computer 20, including a processing unit 21, a system memory 22, and a system bus 23 that couples various system components including the system memory to the processing unit 21. The system bus 23 may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The system memory 22 includes read only memory (ROM) 24 and random access memory (RAM) 25. A basic input/output system 26 (BIOS), containing the basic routines that helps to transfer information between elements within the personal computer 20, such as during start-up, may be stored in ROM 24.

The personal computer 20 further includes input/output devices 27, such as a hard disk drive 28 for reading from and writing to a hard disk, not shown, a magnetic disk drive 29 for reading from or writing to a removable magnetic disk 30, and an optical disk drive 31 for reading from or writing to a removable optical disk 32 such as a CD ROM or other optical media. The hard disk drive 28, magnetic disk drive 29, and optical disk drive 31 are connected to the system bus 23 by a hard disk drive interface 33, a magnetic disk drive interface 34, and an optical drive interface 35, respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer-readable instructions, data structures, program modules and other data for the personal computer 20. Although the exemplary environment described herein employs a hard disk, a removable magnetic disk 30 and a removable optical disk 32, it should be appreciated by those skilled in the art that other types of computer readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROM), and the like, may also be used in the exemplary operating environment. Other I/O devices 27, such as a display 36, keyboard 37, mouse 38, and the like may be included in the personal computer 20 and function in a known manner. For the sake of brevity, other components, such as a joystick, sound board and speakers are not illustrated in FIG. 1.

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The personal computer 20 may also include a network interface 36 to permit operation in a networked environment using logical connections to one or more remote computers, such as a remote computer 40. The remote computer 40 may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to the personal computer 20, although only a memory storage device 42 has been illustrated in FIG. 1. The logical connections depicted in FIG. 1 include a local area network (LAN) 43 and a wide area network (WAN) 44. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, the personal computer 20 is connected to the LAN 43 through the network interface 39. When used in a WAN networking environment, the personal computer 20 typically includes a modem 45 or other means for establishing communications over the wide area network 44, such as the Internet. The modem 45, which may be internal or external, permits communication with remote computers 46-50. In a networked environment, program modules depicted relative to the personal computer 20, or portions thereof, may be stored in the remote memory storage device 42 via the LAN 51 or stored in a remote memory storage device 52 via the WAN 44. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

The present invention is embodied in a system 100 illustrated in the functional diagram of FIG. 2. In a typical telephone communication, an originating telephone 102 is operated by a calling party to place a call to a destination telephone 104. The originating telephone generates signals that are detected by a central office switch 106 operated by a local exchange carrier (LEC) 108. The LEC 108 is the telephone service provider for the calling party. The originating telephone 102 is coupled to the central office switch 106 via a communication link 110. As those skilled in the art can appreciate, the communication link 110 may be a hard-wired connection, such as a fiber optic, copper wire, or the like. Alternatively, the communication link 110 may be a wireless communication link if the originating phone 102 is a cellular telephone or some other form of wireless telephone.

Similarly, the destination telephone 104 is coupled to a central office switch 116 operated by a local exchange carrier (LEC) 118. The destination telephone 104 is coupled to the central office switch 116 via a communication link 120. The communication link 120 may be a hard-wired communication link or a wireless communication link, as described above with respect to the communication link 110. The present invention is not limited by the specific form of communication link or central office switch.

The LEC 108 establishes a communication link with the LEC 118. As illustrated in FIG. 2, the communication link between the LEC 108 and the LEC 118 is through a long distance carrier (LDC) 124. The LEC 108 establishes a communication link 126 with the LDC 124 which, in turn, establishes a communication link 128 with the LEC 118. If the telephone call from the originating telephone 102 to the destination telephone 104 is not a long distance call, the LDC 124 is not required. In this case, the communication link 126 may couple the LEC 108 directly to the LEC 118. The use of the system 100 with other telephone configurations are illustrated in other figures.

To place a telephone call, the calling party activates the originating telephone 102 to dial in the telephone number

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corresponding to the destination telephone number **104**, thereby establishing the communication link **110** with the central office switch **106**. In true, the central office switch **106** establishes the communication link **126** (via the LDC **124**, if necessary), thus establishing a communication link with the central office switch **116**. In a conventional telephone system, the central office switch **116** establishes the communication link **120** to the destination telephone **104** causing the destination telephone to ring. If the subscriber picks up the destination telephone, a complete communication link between the originating telephone **102** and the destination telephone **104** has been established. This is sometimes referred to as "terminating" the telephone call. The specific telecommunications protocol used to establish a telephone communication link between the originating telephone **102** and the destination telephone **104** is well known in the art and need not be described herein. The preceding description of techniques used to establish the telephone communication link are provided only as a basis for describing the additional activities performed by the system **100**.

With the system **100**, the central office switch **116** does not initially establish the telephone communication link **120** with the destination telephone **104** to cause the telephone to ring. Instead, the central office switch **116** establishes a communication link **132** with a computer network **134**, such as the Internet. As those skilled in the art can appreciate, the Internet is a vast multi-computer network coupled together by data links having various communication speeds. Although the Internet **134** may use a variety of different communication protocols, a well-known communication protocol used by the Internet is a Transmission Control Protocol/Internet Protocol (TCP/IP). The transmission of data on the Internet **134** using the TCP/IP is known to those skilled in the art and need not be described in greater detail herein.

The central office switch **116** utilizes conventional telephone communication protocols, which may be different from the TCP/IP communication protocols used by the Internet **134**. The system **100** includes a communication interface **136** to translate data between the two communication protocols. The communication interface **136** includes a telephone interface portion **138** and an Internet interface portion **140**. The telephone interface portion **138** is coupled to the central office switch **116** via the communication link **132** such that communications occurring on the communication link **132** utilize the telephone communication protocol. The Internet interface portion **140** communicates via the Internet using conventional communication protocols, such as TCP/IP.

The communication interface **136** may be implemented on a computing platform that functions as a server. The conventional components of the computing platform, such as a CPU, memory, and the like are known to those skilled in the art and need not be described in greater detail herein. The telephone interface portion **138** may comprise an Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) to communicate with the central office switch **116**. The ISDN PRI, which may be implemented on a plug-in computer card, provides information to the telephone interface portion **138**, such as automatic number identification (ANI), dialed number identification service (DNIS), and the like. As is known, ANI provides the telephone number of the caller's telephone (e.g., the originating telephone **102**) while the DNIS allows the number the caller dialed (e.g., the destination telephone **104**) to be forwarded to a computer system. These data may be con-

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sidered "keys" which may be used by the system **100** to identify the caller and the callee. Thus, the central office switch **116** provides information which may be used to access the affiliation list **150** for the destination telephone **104**.

The Internet interface portion **140** may be conveniently implemented with a computer network card mounted in the same computing platform that includes the ISDN PRI card. However, it is not necessary for satisfactory operation of the system **100** that the interface cards be co-located in the same computing platform. It is only required that the telephone interface portion **138** communicate with the Internet interface portion **140**. The Internet interface portion **140** receives the incoming data (e.g., the ANI, DNIS, and the like) and generates Internet compatible commands. The specific form of the Internet commands using, by way of example, TCP/IP, are within the scope of knowledge of one skilled in the art and need not be described herein. As will be described below, data provided by the central office switch **116** will be used to access data on the Internet and use that data to determine the manner in which a telephone call will be processed.

The Internet **134** stores an affiliation list **150**, which may be established by the user of the destination telephone **104**. Data stored within the affiliation list **150** is accessed by the central office switch **116** to determine the manner in which the call from the originating telephone **102** will be processed. Details of the affiliation list **150** are provided below. The Internet **134** also includes an Internet controller **152** which communicates with a user computer **154** via a network link **156**. The communication between the user computer **154** and the Internet **134** is a conventional communication link used by millions of computers throughout the world. For example, the user computer **154** may be a personal computer (PC) containing a communication interface, such as a modem (not shown). The network link **156** may be a simple telephone communication link using the modem to communicate with the Internet **134**. The Internet controller **152** functions in a conventional manner to communicate with the user computer **154** via the network link **156**. Although the communication link **132** and the network link **156** are both communication links to the Internet, the network link **156** is a conventional computer connection established over a telephone line, a network connection, such as an Ethernet link, or the like. This conventional network link **156** is significantly different from the communication link **132** between the central office switch **116** and the Internet **134**. The central office switch **116** establishes the communication link **132** to access data on the Internet and uses that accessed data to determine how to process an incoming call for the destination telephone **104**. The network link **156** is a computer-to-computer connection that may simply use a telephone as the physical layer to establish the network link.

In the system **100**, the central office switch **116** receives an incoming call from the originating telephone **102** via the central office switch **106** and, optionally, the LDC **124**. Rather than immediately establishing the communication link **120** and generating a ring signal at the destination telephone **104**, the central office switch **116** establishes the communication link **132** and communicates with the Internet **134** via the communication interface **136**. The purpose of such communication is to access the affiliation list **150** and thereby determine the manner in which the user of the destination telephone **104** wishes calls to be processed.

FIG. 3 illustrates the system **100** for a telephone system configuration in which the originating telephone **102** and the

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destination telephone **104** are both serviced by the same local exchange carrier **108**. The originating telephone **102** establishes the communication link **110** with the central office switch **106** in the manner described above. The central office switch **106** establishes the communication link **126** directly with the central office switch **116** without the need for the LDC **124** (see FIG. 2). The central office switch **116** operates in the manner described above. That is, the central office switch **116** does not immediately establish the communication link **120**, but does establish the communication link **132** with the Internet **134**. For the sake of simplicity, FIG. 3 does not illustrate the communication interface **136**. However, those skilled in the art will appreciate that the central office switch **116** accesses the affiliation list **150** via the communication interface **136** (see FIG. 2).

For the sake of simplicity, FIG. 3 also does not show the Internet controller **152** and the user computer **154**. However, those skilled in the art can appreciate that those portions of the system may also be present in the embodiment illustrated in FIG. 3. However, it should be noted that the user computer **154** and the Internet controller **152** need only be used to edit the affiliation list **150**. The call processing by the central office switch **116** does not depend on the presence of the Internet controller **152** or the user computer **154**. That is, the central office switch **116** accesses the affiliation list **150** via the communication interface **136** regardless of the presence of the user computer **154**.

In yet another telephone system configuration, illustrated in FIG. 4, the originating telephone **102** and the destination telephone **104** are not only serviced by the same local exchange carrier **108**, but are connected to the same central office switch **116**. However, the fundamental operation of the system **100** remains identical to that described above with respect to accessing the affiliation list **150**. That is, the originating telephone **102** establishes the communication link **110** with the central office switch **116**. However, the central office switch **106** need not establish the communication link **126** with any other central office switch since the destination telephone **104** is also connected to that same central office switch.

In this telephone system configuration, the central office switch **116** accesses the affiliation list **150** on the Internet **134** via the communication link **132** (see FIG. 2) in the manner described above. For the sake of simplicity, FIG. 4 does not illustrate the communication interface **136**. However, those skilled in the art will recognize that the communication interface **136** operates to convert communication signals between telephone protocol used by the central office switch **106** and the Internet communication protocol used by the Internet **134**. In addition, FIG. 4 also does not illustrate the Internet controller **152** and the user computer **154**. As noted above with respect to FIG. 3, the Internet controller **152** and user computer **154** are not necessary for proper operation of the system **100**. The user computer **154** is typically used in the system **100** to edit the affiliation list **150**.

The affiliation list **150** is illustrated in greater detail in the functional block diagram of FIG. 5. The affiliation list comprises a series of sublists, illustrated in FIG. 3 as a forward list **160**, a reverse list **162**, a block list **164**, and an allow list **166**. The forward list **160** contains a list of Internet subscribers whose Internet activity a user wishes to monitor. This list is sometimes referred to as a "buddy" list. When the user operates the user computer **154** on the Internet **134**, the Internet controller **152** accesses the forward list **160** via an affiliation list input/output (I/O) interface **170** to determine which Internet subscribers contained within the forward list

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are currently active on the Internet **134**. In conventional Internet operation, the Internet controller **152** sends a message to the user computer **154** indicating which Internet subscribers on the forward list **160** are currently active on the Internet **134**.

The forward list **160** is a list of Internet subscribers whose activity is reported to the user. Other Internet subscribers may have their own forward list (not shown) and may monitor the Internet activity of the user. When the user accesses the Internet **134** with the user computer **154**, that activity can be monitored by others. With the system **100**, it is possible to determine who is monitoring the user's Internet activity. The reverse list **162** contains a list of Internet subscribers who have placed the user in their forward list. That is, the reverse list **162** contains a list of Internet subscribers who have placed the user in their buddy list. With the reverse list **162**, the user can determine who is monitoring his Internet activity.

The block list **164** contains a list of Internet subscribers that the user does not want to monitor his Internet activity. That is, the user's Internet activity will not be provided to any Internet subscriber contained in the block list **164**. Thus, even if a particular Internet subscriber has placed the user on their forward list, the presence of that particular Internet subscriber's name on the block list **164** will prevent the user's Internet activity from being reported to the particular Internet subscriber. The use of the block list **164** provides certain security assurances to the user that their Internet activity is not being monitored by any undesirable Internet subscribers.

The allow list **166** contains a list of Internet subscribers for whom the user may wish to communicate with but whose Internet activity the user does not wish to monitor.

The system **100** combines the capabilities of the affiliation list **150** with telephone switching technology to filter incoming calls to the destination telephone **104**. For example, the user may specify that only calls from Internet subscribers contained in the forward list **160** may contact the user via the destination telephone **104**. Alternatively, the user may specify that a calling party whose name is contained in the forward list **160** or the allow list **166** may place a call to the destination telephone **104**. As will be discussed in greater detail below, the system **100** allows the user to create general conditional processing, such as blocking calls or allowing calls. However, the user can also create specific conditional processing for individual callers or based on the user's current status or preferences.

The central office switch **116** accesses the affiliation list **150** via the communication link **132** and determines whether the calling party is in a list (e.g., the forward list **160**) that the user wishes to communicate with. If the calling party is contained within an "approved" list, the central office switch **116** establishes the communication link **120** and sends a ring signal to the destination telephone **104**. Thus, the user can pick up the telephone with the knowledge that the calling party is an individual with whom the user wishes to communicate.

Conversely, if the calling party is not contained within an approved list, such as the forward list **160** or the allow list **166**, the central office switch **116** will not establish the communication link **120** with the destination telephone **104**. Thus, the user will not be bothered by undesirable phone calls. In one embodiment, the central switch office simply will not establish the communication link **120** and the calling party will recognize that the call did not go through. Alternatively, the central office switch **116** may generate a

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signal indicating that the destination telephone **104** is busy. In this alternative embodiment, the calling party will receive a busy signal on the originating telephone **102**. Thus, the user has the ability to filter incoming calls by creating a list of those individuals with whom the user wishes to communicate.

It should be noted that the affiliation list **150** may be dynamically altered by the user to add or delete individuals, change individuals from one list to another, or to change the call processing options for a particular list depending on the user's preferences. For example, the user may want to accept all calls from any source at certain times of the day. Under these circumstances, the user can edit the allow list **166** to accept calls from any calling party. Alternatively, the user may still maintain the block list **164** such that calls will not be processed from certain specified parties even if the user is willing to accept calls from any other source. Under other circumstances, the user may not wish to communicate with any individuals. In this instance, the user may indicate that all calling parties are on the block list **164**. Thus, the central office switch **116** will access the Internet **134** in real-time and review data in the affiliation list **150** to thereby process incoming calls for the user in accordance with the rules present in the affiliation list.

The discussion above provides examples of the central office switch **116** processing calls from a calling party in accordance with their presence or absence of certain lists in the affiliation list **150**. For example, a call from a party on the forward list **160** will be connected to the destination telephone **104** (see FIG. 2) while a call from a party on the block list **164** will not be put through to the destination telephone. However, the system **100** also allows the selection of call processing options on an individual basis rather than simply on the presence or absence in a particular list. For example, the user can edit the allow list **166** to specify that certain individuals are "allowed" while other individuals may be allowed, conditionally allowed, or blocked all together. If the individual calling party has an associated status indicating that they are allowed, the central office switch **116** will process the incoming call and connect it to the destination telephone **104**. If the individual calling party has an associated blocked status, the central office switch **116** will not process the call and will not connect it to the destination telephone **104**.

Furthermore, the user may attach conditional status to individual callers or to calling lists. Conditional status may be based on factors, such as the time of day, current availability of the user, work status, or the like. For example, the user may accept calls from certain work parties during specified periods of the day (e.g., 9:00 a.m.–11:00 a.m.), block calls from selected calling parties during other periods of time (e.g., 12:00–1:00 p.m.), or allow calls during a business meeting only from certain calling parties (e.g., the boss). These conditional status criteria may be applied to individuals or to one or more lists in the affiliation list **150**.

FIG. 6 illustrates sample data entries in the allow list **166**. The allow list **166** may include data, such as a name, Internet subscriber name, and one or more phone numbers associated with the individual data entry. It should be noted that the calling party need not have an Internet subscriber name for proper operation of the system **100**. That is, the central office switch **116** accesses the allow list **166** utilizing the calling party number and need not rely on any email addresses or other Internet subscriber identification for proper operation. The allow list **166** may also include an email alias in addition to or in place of the Internet subscriber name. Some Internet subscribers prefer to "chat" with other subscribers

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utilizing an alias rather than their actual Internet subscriber name. The data of FIG. 6 illustrates one possible embodiment for the allow list **166**. However, those skilled in the art can appreciate that the allow list **166** may typically be a part of a large database (not shown). Database operation is well known in the art, and need not be described in greater detail herein. The database or other form of the forward list **160** may be satisfactorily implemented using any known data structure for storage of data. For example, the various lists (e.g., the allow list **166**, the reverse list **162**, the block list **164** and the allow list **166**) may all be integrated within a single database structure. The present invention is not limited by the specific structure of the affiliation list **150** nor by the form or format of data contained therein.

Rather than incoming call filtering on the basis of presence in a particular list, such as the allow list **166**, as illustrated in FIG. 6, the affiliation list **150** may contain status data on an individual basis. In this event, the central office switch **116** (see FIG. 2) processes the incoming call in accordance with the designated status for that individual. In the example illustrated in FIG. 7, the affiliation list **150** contains one individual with an "allowed" status, one individual with a "blocked" status, and one individual with a "conditional" status based on user-selected criteria. In the example of FIG. 7, the user-selected criteria may be based on the particular phone from which the call is originating as well as the time of day in which the call is originated. For example, the user may wish to allow all calls from a particular number, such as an caller's work number. However, calls from another number, such as the caller's home phone, may be blocked. Other calls, such as from a caller's cellular telephone, may be allowed only at certain times of day. FIG. 7 is intended to illustrate some of the call processing options that are available to the user. As can be appreciated, a variety of different conditional status criteria may be applied to one or more potential calling parties. However, a common feature of the system **100** is that the telecommunication system (e.g., the central office switch **116**) determines calling party status on the basis of information stored on the Internet and processes the incoming call in accordance with the user-specified criteria. Moreover, the system **100** operates in real-time to process the incoming call in accordance with the user-specified criteria.

The Internet **134** may be conveniently used as a storage area for the caller specified criteria. The advantage of such data storage on the Internet is that the data is widely accessible to the user. This provides a convenient mechanism for entering new caller data or editing existing caller data. The user can access the affiliation list **150** with the user computer **154** via the network link **156**. In contrast, the central office switch **116** may access the affiliation list **150** via the communication link **132**, which may typically be a high-speed communication link. In addition, FIGS. 2, 4, and 5 illustrate the central office switch **116** as the telecommunication component that accesses the Internet **134**. It is convenient for operational efficiency to have the central office switch (e.g., the central office switch **116**) to which the destination telephone **104** is connected perform such Internet access. It is at this stage of the telephone call processing that the telecommunication system may most conveniently determine the user-specified caller status. However, those skilled in the art will recognize that the status check may be performed by other portions of the telecommunication system, such as the central office switch **106**, the LDC **124**, or the like. Thus, the present invention is not limited by the particular telecommunication component that establishes the communication link with a network which the user-specified caller status data is stored.

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In addition, the system **100** can be readily implemented as an "add-on" component of the telecommunication system and need not be integrated with the central office switch **116**. For example, the conventional central office switch provides the ability to divert calls based on certain call conditions, such as "Call Forward No Answer," which may be used to divert an incoming call to voicemail or "Call Forward Busy," which may also divert the incoming call to voicemail. To implement the system **100** with an add-on processor, the system may optionally include a Switch to Computer Applications Interface (SCAI) **174** and a call filtering processor **176**. The dashed lines of FIG. **4** are intended to illustrate an alternative configuration of the system **100**. This alternative configuration can also be implemented with other telephone system configurations, such as illustrated in FIGS. **2** and **3**. The SCAI **174** is a telecommunication protocol that allows switches to communicate with external computers. Data, such as caller and callee telephone numbers, and status information, such as Call Forward Busy, are provided to the SCAI **174** by the central office switch **116**.

The call filtering processor **176** performs the functions described above to process the call in accordance with the user-specified criteria. That is, the call filtering processor **176** receives caller and callee data from the SCAI **174** and accesses the affiliation list **150** via the communication interface **136** (see FIG. **2**). The call filtering processor **176** uses user-specified call processing criteria to generate instructions for the central office switch **116**. The instructions are provided to the central office switch **116** via the SCAI **174**. Those skilled in the art will appreciate that the SCAI **174** is but one example of the Open Application Interface (OAI) that can be used with the central office switch **116**.

As noted above, the system **100** can process a call intended for the destination telephone **104**, block a call, or generate a busy signal at the originating telephone **102**. However, the system **100** also operates with voicemail and permits a number of different customized outgoing messages. FIG. **4** illustrates a voicemail system **180** having a storage area containing one or more outgoing messages **182**. For example, the voicemail system **180** can play an outgoing message **182** informing the caller that "the party you are calling only accepts calls from designated callers. Please leave a message." If calls are blocked only at certain times, the outgoing message **182** can say "the party you are calling does not accept calls between 11:30 a.m. and 1:00 p.m. Please leave a message or call back after 1:00 p.m." The outgoing message can also reflect callee availability by playing a message such as "The party you are calling is in a meeting. Please leave a message or call back in X minutes" where X reflects the amount of time before the meeting is expected to end. That information can be manually provided to the affiliation list **150** by the user or automatically derived from a computerized scheduling program on, by way of example, the user computer **154** (see FIG. **2**).

Computerized scheduling programs, such as Microsoft® Schedule Plus, can be used on the user computer **154** (see FIG. **2**). It is known that such scheduling programs can be accessed via a computer network or downloaded to a handheld computing device to track appointments. The system **100** can access such computerized scheduling programs and download appointments and scheduled meetings into the affiliation list **150**. The outgoing messages **182** can be automatically selected on the basis of the user's computerized schedule. Thus, the system **100** permits the user to schedule his day (e.g., meetings, lunch time, in office/

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available for calls, in office/unavailable for calls, etc.) on a computerized scheduling program and to process calls in accordance with the computerized schedule and even select outgoing messages automatically based on the user's schedule.

The operation of the system **100** is illustrated in the flowchart of FIG. **7**. At a start **200**, the calling party has placed a call from the originating telephone **102** (see FIG. **2**) to the destination telephone **104**. In step **202**, the central office switch **116** has received call data from the originating telephone **102**. The received call data includes the destination telephone number of the destination telephone **104** and identification data indicating the originating telephone **102** as the source of the present call. Use of automatic number identification (ANI) is a well-known technique for providing identification data indicating the originating telephone **102** as the source of the present call. While the specific implementation of ANI data, sometimes referred to as caller ID, may not be uniformly implemented throughout the United States, the ANI data is typically delivered between the first and second rings. In the present invention, the central office switch **116** (see FIG. **2**) does not initiate a ring signal to the destination telephone **104** until after determining the status of the calling party based on the ANI. In future implementations, telecommunication companies may transmit other forms of caller identification, such as caller name, Internet address, email alias, or the like. The system **100** operates satisfactorily with any form of caller identification. The only requirement for the system **100** is that some form of caller identification be provided. The call is processed in accordance with the user-specified criteria in the affiliation list **150** for the identified caller.

In step **204**, the central office switch **116** (see FIG. **2**) establishes the communication link **132** with the Internet **134**. Although step **204** illustrates the system **100** as actively establishing the communication link **132** with the Internet **134**, those skilled in the art will recognize that the system **100** can utilize a continuous high-speed data link between the central office switch and the Internet. Thus, it is not necessary to establish a network link for each and every incoming call processed by the central office switch **116**. As previously described, the communication interface **136** translates data between the telephone protocol and the Internet protocol. In step **206**, the system **100** accesses the affiliation list **150** for the user (i.e., the called party). In an exemplary embodiment, the telephone number of the destination telephone **104** or other callee identification is used as an index or pointer to a specific location within the database where the affiliation list **150** for the particular user may be found. Database operation in general, and techniques for locating specific items within a database in particular are known to those skilled in the art and need not be described herein.

In decision **210**, the system **100** determines whether the caller identification data is on the forward list **160** (see FIG. **3**). If the caller identification data is present in the forward list, the result of the decision **210** is YES. In that event, the system **100** proceeds to FIG. **7B** where the call is processed in accordance with the rules associated with the forward list **160**.

If the caller identification data is not present in the forward list **160** (see FIG. **3**), the result of decision **210** is NO. In that event, the system **100** moves to decision **212** to determine whether the caller identification data is in the allow list **166**. If the caller identification data is present in the allow list **166**, the result of decision **214** is YES. In that event, the system **100** proceeds to decision **216** where the

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call is processed in accordance with the rules associated with the allow list 166. If the caller identification data is not present in the allow list 166, the result of decision 216 is NO.

In decision 218, the system 100 determines whether the caller identification data is present in the reverse list 162. If the caller identification data is present in the reverse list 162, the system 100 proceeds to the step 220 where the call is processed in accordance with the rules associated with the reverse list 162. If the caller identification data is not present in the reverse list, the result of decision 218 is NO. In that event, the system moves to decision 216 to determine whether the caller is present on the block list 164. If the caller is present on the block list 164, the result of decision 222 is YES. In that event, the system proceeds to step 224 where the call is processed in accordance with the rules associated with the block list. If the caller identification data is not present in the block list 164, the result of decision 222 is NO. This indicates that the caller identification data is not present in any of the user-specified lists in the affiliation list 150. In that event, the system moves to step 226 where the call may be processed in accordance with user-specified rules of processing anonymous or unidentified calls. The flowchart of FIG. 8 illustrates the operation of the system 100 with multiple lists wherein the call processing rules are designated for each list. In this embodiment, the call is processed on the basis of the presence or absence of the caller identification data in a particular list. However, as previously discussed, the affiliation list 150 (see FIG. 6B) may include user-specified status criteria for individual callers. In this embodiment, the system 100 processes the call on the basis of the user-specified status criteria associated with the individual caller rather than on the basis of the caller's presence or absence in a specific list. In that event, the system 100 may simply access the user affiliation list (see step 206 in FIG. 7) and process the call in accordance with the user-specified status criteria for the individual caller. If the caller identification data is not present in the affiliation list 160, the call may be processed using user-specified call processing criteria for unidentified callers, as shown in step 226.

Thus, the system 100 allows the user to specify call processing rules for a plurality of different caller lists or for individual callers within a list. The caller lists may be readily edited in accordance with the changing desires of the user. The user may alter the call processing rules in accordance with various times of day, work conditions, or even the personal mood of the user. For example, the user may process all calls during certain times of the day, such as when the user is at work. However, when the user arrives home, subsequent calls may be processed in accordance with a different set of rules, such as accepting no calls during dinner time or after a certain time at night.

These rules may be applied differentially to different ones of the list in the affiliation list 150. For example, the user may accept calls from any calling party on the forward list 160 (see FIG. 3) or the allow list 166 during the evening hours. However, after a certain time at night, the caller may accept calls only from calling parties on the forward list 160. Thus, the system 100 allows great flexibility in the user selection of calling rules and lists. The system 100 allows the user to filter incoming calls in accordance with generalized rules or in accordance with highly specific rules.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. For example, the system discussed herein

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uses, by way of example, the Internet 134 to store the affiliation list 150. However, the system 100 can be implemented with other computer networks or as a portion of a telephone switch, such as the central office switch 116. The telephone service provider can provide a customer with an affiliation list and some means to control the list as a value-added telephone service. The central office switch 116 accesses the internal affiliation list and processes the incoming calls in accordance with the user-specified criteria contained therein. Accordingly, the invention is not limited except as by the appended claims.

What is claimed is:

1. In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a system for processing an incoming call from a subscriber to a user in the telephone network according to user specifications, the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing, wherein the data structure stores the user-selectable criteria in one or more lists that are used in filtering an incoming call and wherein some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the one or more lists over the computer network access port; and

a controller to receive the incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

2. The system of claim 1 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the controller using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

3. The system of claim 2 wherein the identification data is telephone automatic number identification data.

4. The system of claim 2 wherein the identification data is electronic mail identification data.

5. The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call, the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone.

6. The system of claim 1 wherein the user-selectable criteria indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone.

7. The system of claim 6 wherein the controller blocking the incoming call generates a busy signal at an origination telephone from which the incoming call is originated.

8. The system of claim 6, further comprising an outgoing message system having an outgoing message, the controller blocking the incoming call and playing the outgoing message at an origination telephone.

9. The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the controller processing

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the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during a time period other than the user-selected time period.

10. The system of claim 9, further comprising an outgoing message system storing a plurality of outgoing messages, the controller selecting one of the plurality of outgoing messages wherein the outgoing message system plays the selected outgoing message at an origination telephone from which the incoming call is originated.

11. The system of claim 10 wherein the incoming call arrives at a particular time other than the user-selected time period, the controller selecting the selected outgoing message based on the particular time of arrival of the incoming call.

12. The system of claim 1, further comprising a data editor to permit user entry and editing of the user-selectable criteria into the data structure.

13. The system of claim 12 wherein the data editor is a computer coupled to the computer network.

14. The system of claim 1 wherein the computer network is the Internet.

15. The system of claim 1 wherein each of the one or more lists of the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the controller using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

16. The system of claim 15, further comprising a data editor to permit user entry of the caller identification data into the data structure prior to receipt of the incoming call.

17. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, the controller processing the incoming call and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

18. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, the controller blocking processing of the incoming call if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

19. The system of claim 18 wherein the controller blocking processing of the incoming call generates a busy signal at an origination telephone from which the incoming call is originated.

20. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls subject to user-selected time restrictions, the controller processing the incoming call in accordance with the time restrictions and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

21. In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled

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with the telephone network, a system for user specification of call processing in the telephone network, the system comprising:

a data structure contained within a computer network and accessible by the telephone network, the data structure containing a plurality of caller lists each having associated user-selectable criteria for call processing, wherein some of the plurality of caller lists are conditioned according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the plurality of caller lists; and

a controller on the telephone network to receive an incoming call having origination data indicative of a subscriber and destination data indicating the call is designated for the user telephone, the controller accessing the plurality of caller lists in the data structure via the computer network access port to determine which of the plurality of caller lists contains the origination data, the controller processing the incoming call in accordance with the user-selectable criteria associated with the caller list containing the origination data.

22. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call, the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone.

23. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone.

24. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call during a user-selected time period, the controller processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

25. The system of claim 21, further comprising a data editor to permit user entry and editing of the user-selectable criteria into the data structure.

26. The system of claim 21 wherein the computer network is the Internet.

27. The system of claim 21 wherein the telephone network is a public switched telephone network.

28. In a system where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a computer program product for implementing a method for processing a call from a subscriber to a user over a telephone network, the computer program product comprising:

a computer readable medium having computer executable instructions for performing the method, the method comprising:

accepting an incoming call designated for the user telephone;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the

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user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call in accordance with the user-selectable criteria.

29. The computer program product of claim 28, further comprising:

generating call processing rules based on the user-selectable criteria; and

storing the call processing rules on the computer network in association with a caller list.

30. The computer program product of claim 29 wherein generating call processing rules is performed on a computer coupled to the computer network.

31. The computer program product of claim 28 wherein the data structures store the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the method further comprising accessing the data structure using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

32. The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call, the method comprising:

processing the incoming call comprising establishing a link with the user telephone; and

generating a ring signal at the user telephone.

33. The computer program product of claim 28 wherein the user-selectable criteria indicates no permission to process the incoming call, the method further comprising

processing the incoming call comprising blocking the incoming call; and

not generating a ring signal at the user telephone.

34. The computer program product of claim 33, further comprising generating a busy signal at an origination telephone from which the incoming call is originated.

35. The computer program product of claim 34, further comprising playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone.

36. The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the method further comprising:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone; and

blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

37. The computer program product of claim 28 wherein the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the method further comprising:

accessing the data structure using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data; and

processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

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38. In a system including a telephone network and a computer network where an originating telephone connects with a user telephone over the telephone network, a method for processing a call from the originating telephone to the user telephone according to user specifications, the method comprising:

accepting an incoming call designated for the user telephone from an originating telephone of a subscriber;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call of the subscriber in accordance with the user-selectable criteria.

39. The method of claim 38, further comprising generating call processing rules based on the user-selectable criteria and storing the call processing rules on the computer network in association with a caller list that is associated with the data structure.

40. The method of claim 39 wherein generating call processing rules is performed on a computer coupled to the computer network.

41. The method of claim 38 wherein the computer network is the Internet.

42. The method of claim 38 wherein the telephone network is a public switched telephone network.

43. The method of claim 38 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, wherein accessing a data structure further comprises using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

44. The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call, wherein processing the incoming call further comprises establishing a link with the user telephone and generating a ring signal at the user telephone.

45. The method of claim 38 wherein the user-selectable criteria indicates no permission to process the incoming call, wherein processing the incoming call further comprises blocking the incoming call and not generating a ring signal at the user telephone.

46. The method of claim 45, further comprising generating a busy signal at an origination telephone from which the incoming call is originated.

47. The method of claim 45, further comprising playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone.

48. The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, wherein processing the incoming call further comprises:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone;

blocking the incoming call; and

not generating a ring signal at the user telephone during time periods other than the user-selected time period.

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49. The method of claim **38** wherein the data structure comprises a plurality of data substructures each storing caller identification and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, wherein accessing the data structure further comprises using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

50. The method of claim **49** wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incom-

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ing calls, wherein processing the incoming call further comprises signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

51. The method of claim **49** wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, wherein processing the incoming call further comprises not establishing a communication link with the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,421,439 B1
DATED : July 16, 2002
INVENTOR(S) : Stephen Mitchell Liffick

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 1,

Line 37, after "need for" please insert -- a --

Column 3,

Line 61, before "and the like" please delete "(ROM)," and insert -- (ROMs), --

Column 5,

Line 3, after "In" please delete "true" and insert -- turn --

Column 10,

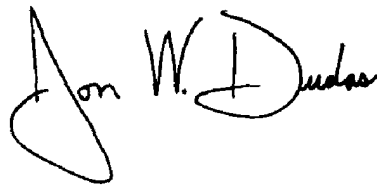
Line 28, after "such as" please delete "an" and insert -- a --

Column 17,

Line 31, after "method further comprising" please insert -- : --

Signed and Sealed this

Sixth Day of April, 2004

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looped initial "J" and a distinct "D".

JON W. DUDAS
Acting Director of the United States Patent and Trademark Office

Exhibit 3

(12) **United States Patent**
Liffick

(10) **Patent No.:** **US 6,430,289 B1**
(45) **Date of Patent:** **Aug. 6, 2002**

- (54) **SYSTEM AND METHOD FOR
COMPUTERIZED STATUS MONITOR AND
USE IN A TELEPHONE NETWORK**

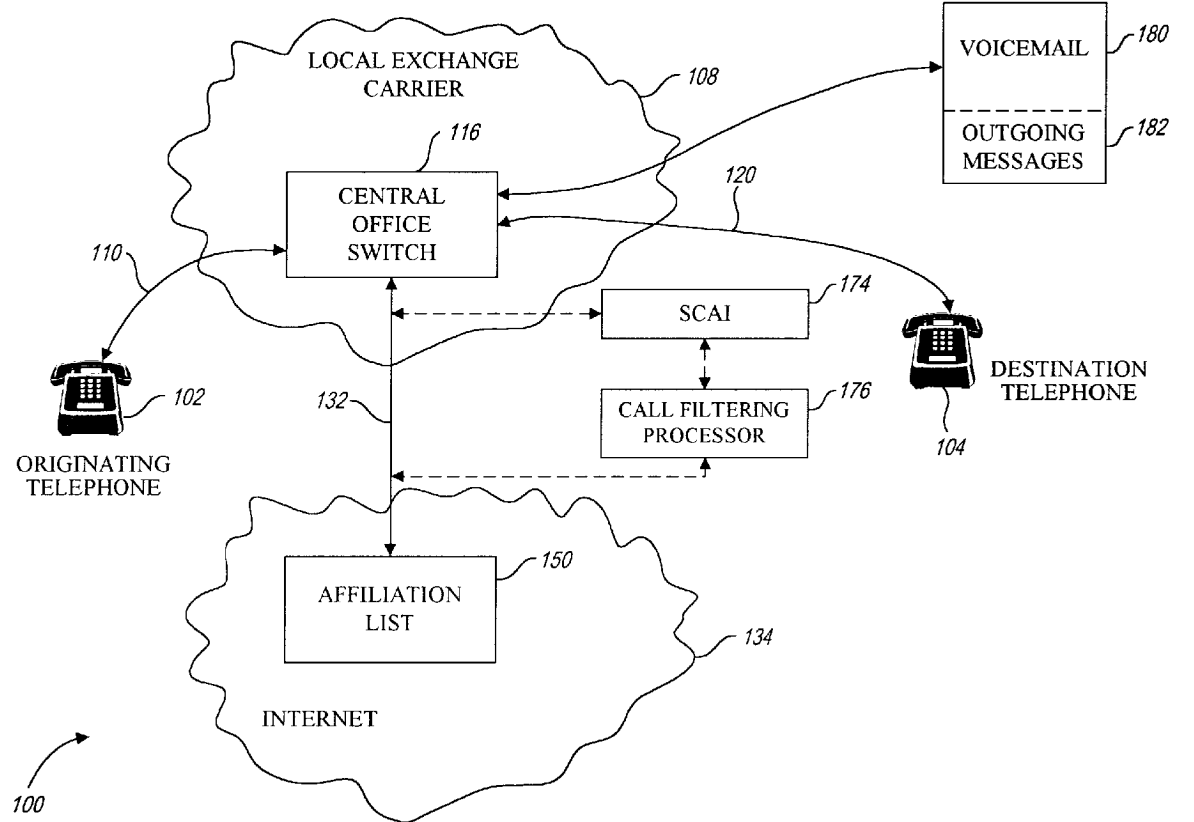
6,169,796 B1 * 2/2001 Bauer et al. 379/212 X
6,229,883 B1 * 5/2001 Kakizaki et al. 379/93.23
* cited by examiner
- (75) Inventor: **Stephen Mitchell Liffick**, Seattle, WA (US)

Primary Examiner—Craigton Smith
(74) Attorney, Agent, or Firm—Workman, Nydegger, Seeley
- (73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

(57) **ABSTRACT**

A telecommunication system combines telephone technology and computer network technology to monitor a caller and callee's computer activity and to access call processing criteria selected by the caller and callee and stored on the computer network. A component of the telephone system, such as a central office switch, accesses the caller and callee call processing criteria. The system evaluates the call processing criteria and, when conditions for both caller and callee are met, the telephone system initiates a telephone call between the caller and callee. The call processing criteria may include accepting all calls, no calls, or calls only from specified parties. In addition, the call processing criteria can vary in accordance with the time of day or an individual's personal preferences, or status, such as when an individual is in a meeting. A user's computer activity may also be monitored and the computer status as idle or active may be reported to the computer network as part of the call processing criteria.
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
- (21) Appl. No.: **09/291,693**
- (22) Filed: **Apr. 13, 1999**
- (51) **Int. Cl.⁷** **H04M 1/00**
- (52) **U.S. Cl.** **379/900; 379/142.15; 370/352**
- (58) **Field of Search** 379/201.06, 209.07, 379/201.08, 201.1, 210.11, 142.15, 196, 197, 198, 199, 900; 370/352, 353, 354
- (56) **References Cited**
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- 20 Claims, 10 Drawing Sheets



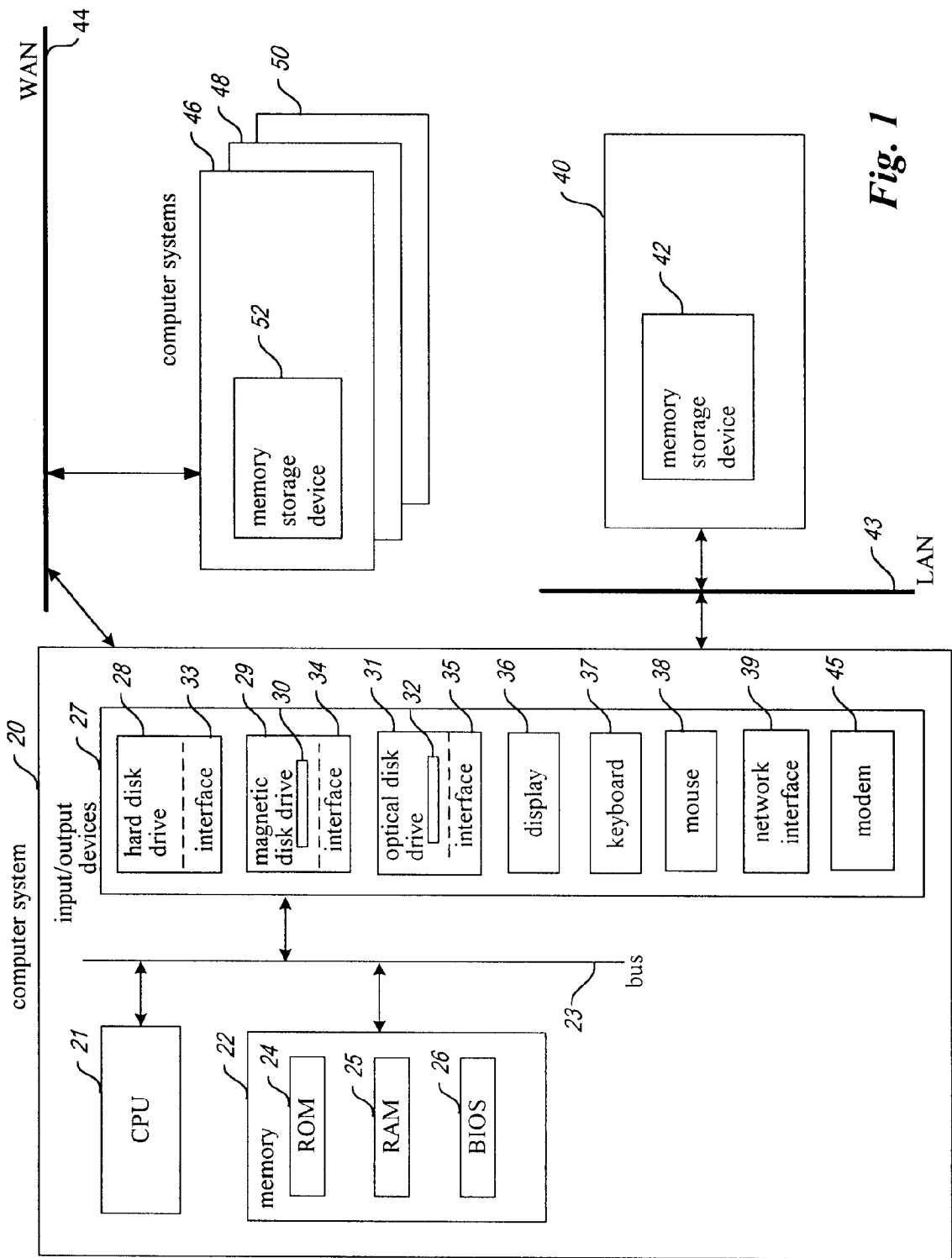


Fig. 1

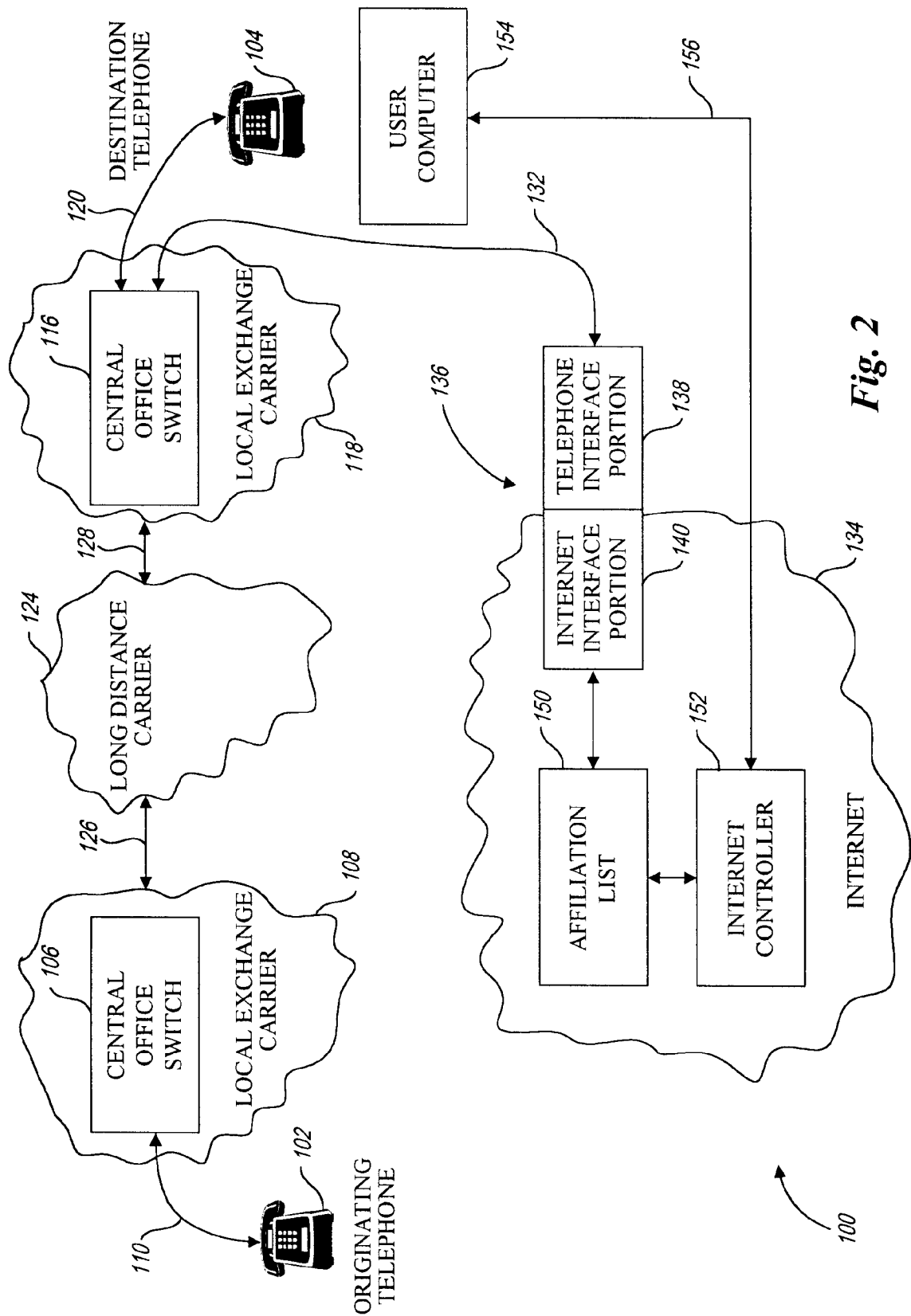


Fig. 2

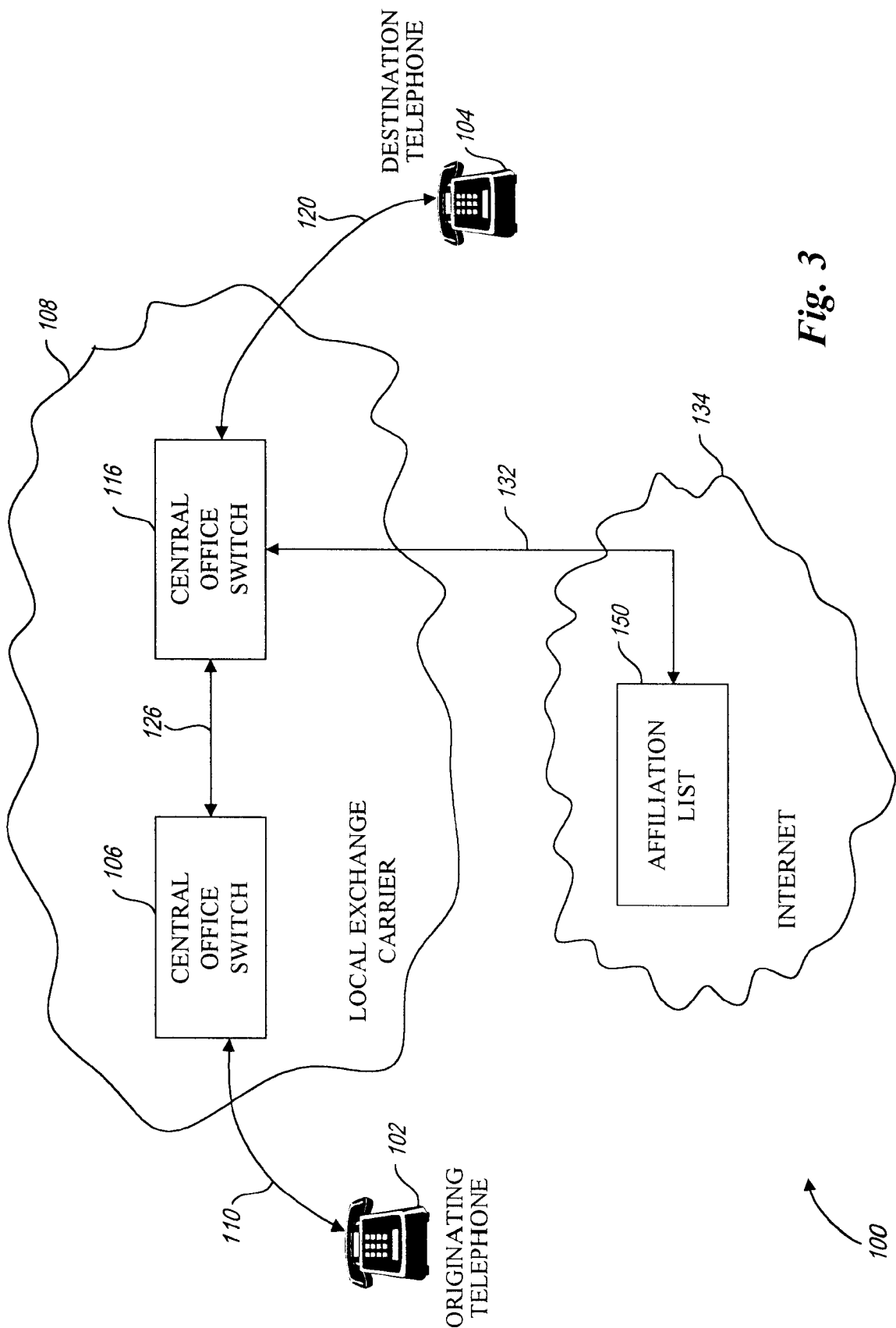


Fig. 3

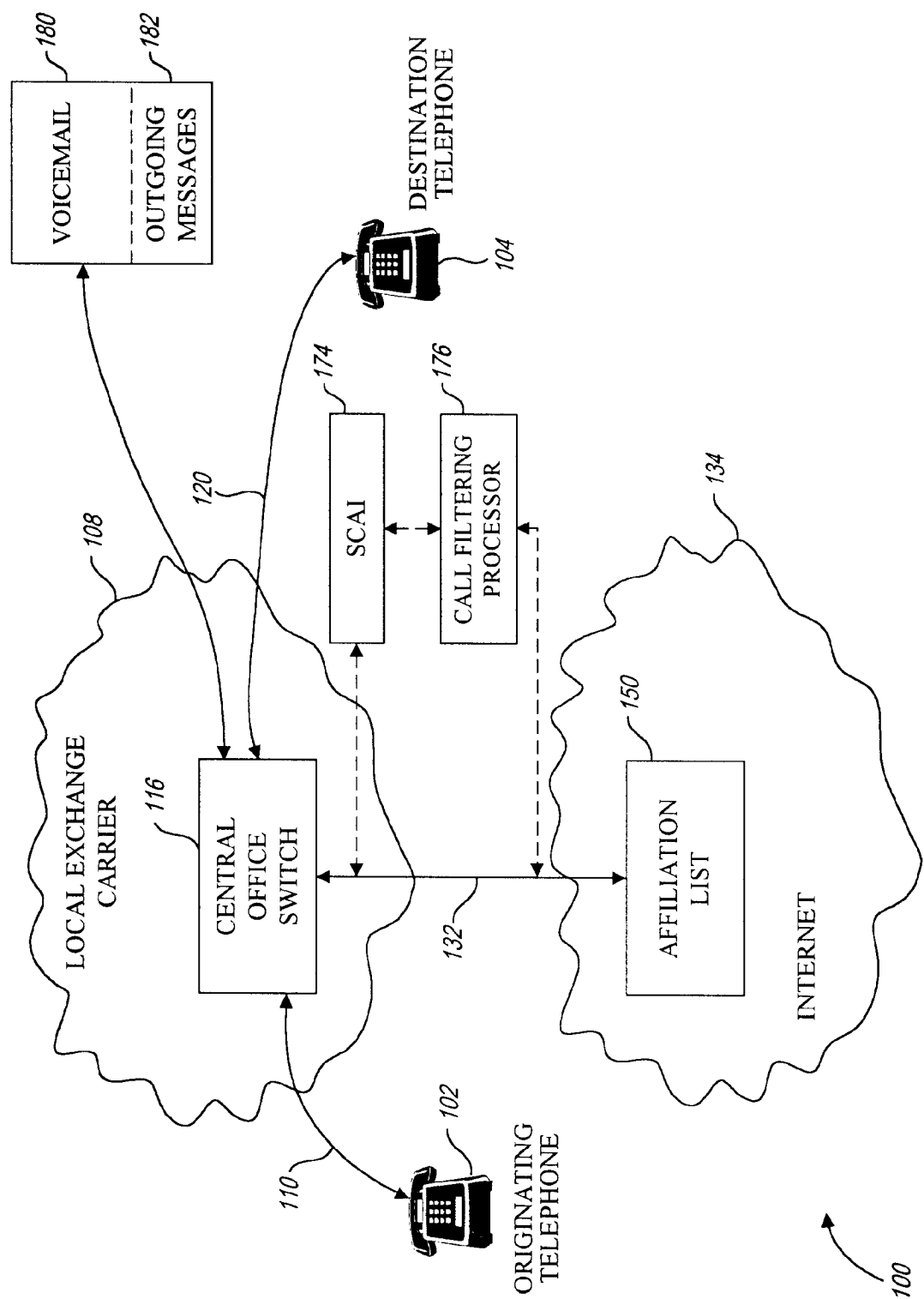


Fig. 4

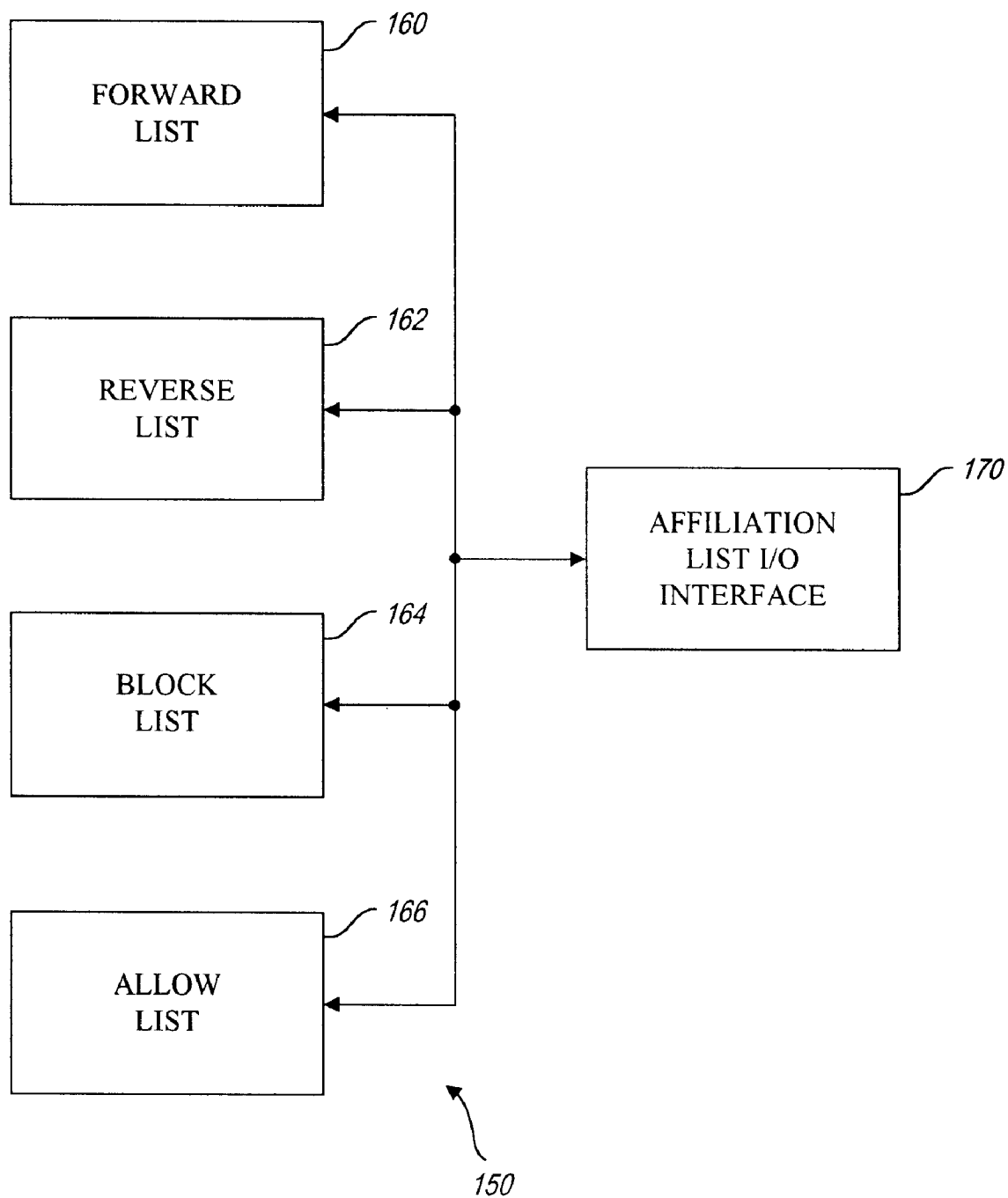


Fig. 5

Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
.	
.	
.	
.	
.	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
.	
.	
.	
.	
.	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239

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Fig. 6

Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
Status	Allowed
.	
.	
.	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
Status	Blocked
.	
.	
.	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239
Status	Conditional
Phone 1	- Allowed
Phone 2	- Allowed 9:00 a.m. - 11:30 a.m.
Phone 3	- Blocked

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Fig. 7

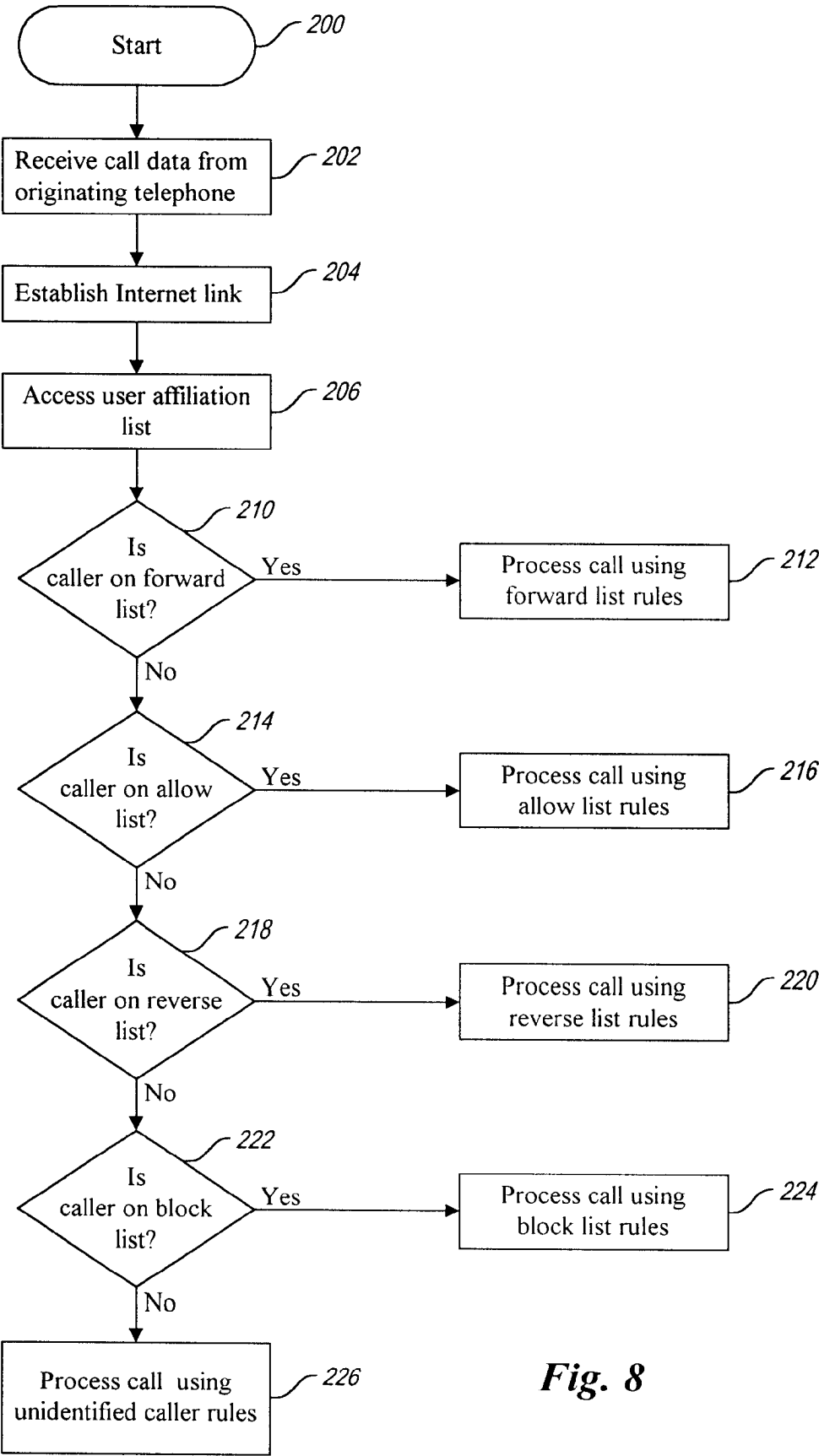


Fig. 8

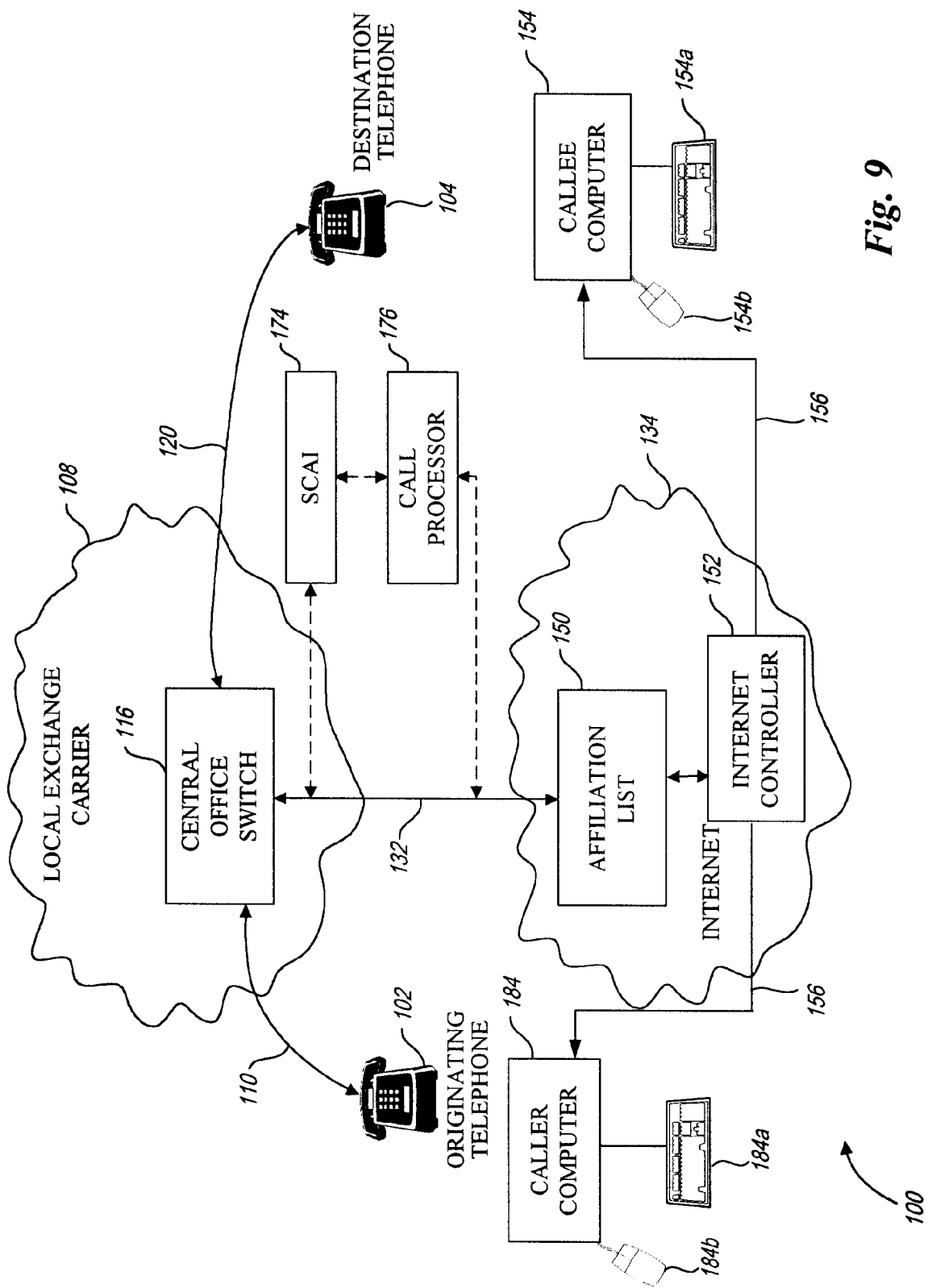


Fig. 9

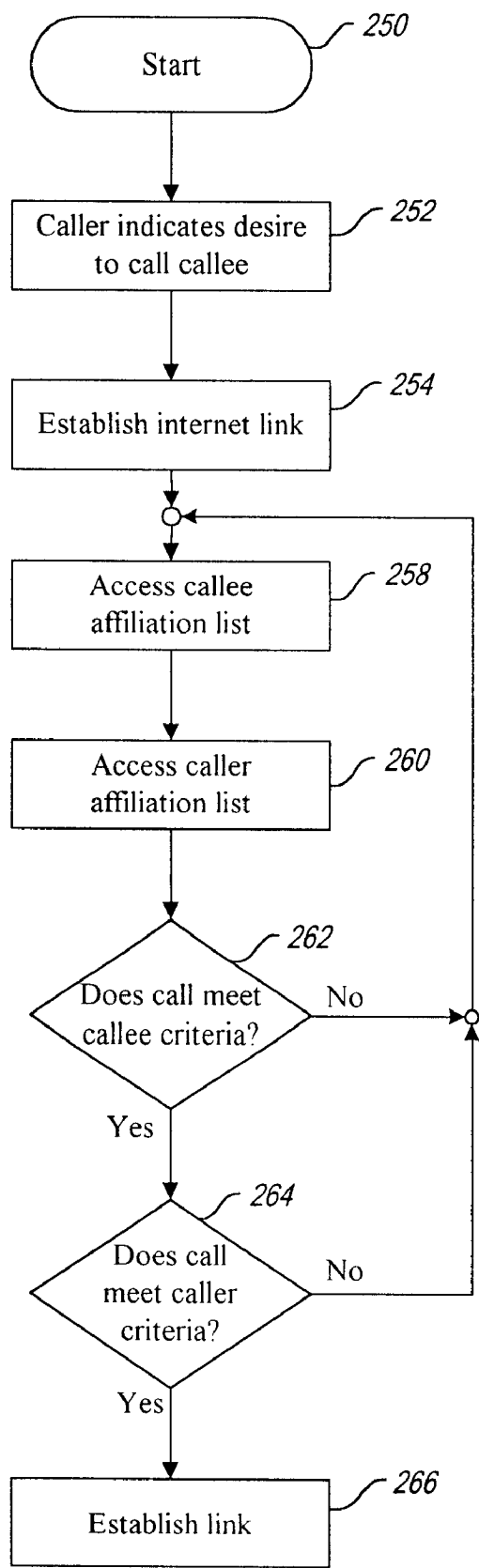


Fig. 10

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**SYSTEM AND METHOD FOR
COMPUTERIZED STATUS MONITOR AND
USE IN A TELEPHONE NETWORK**

TECHNICAL FIELD

The present invention is directed generally to telecommunications and, more particularly, to a system and method for establishing a telephone communication link using status reporting information from an independent computer network.

BACKGROUND OF THE INVENTION

Telephone communication systems have increased in both size and complexity. Early telephone systems required a human operator to manually connect an originating telephone with a destination telephone. With the introduction of automatic switching technology, the need for human operators to connect each and every call disappeared. However, even automated switches did not provide the wide range of features available on most telephone systems, such as voicemail, caller identification, call waiting, call forwarding, three-way calling and the like. Most telephone systems today include these features and allow the customer to select one or more features to customize their telephone service. With features such as voicemail, the telephone switching system must recognize when the destination telephone is either busy or remains unanswered. If either of these conditions occur, the calling party is routed to the voicemail service associated with the destination telephone.

Despite these improvements, telephone systems are incapable of determining when a particular recipient (i.e., a callee) may be available to receive a call. The caller has no choice but to place a call to the destination telephone and hope that the callee answers. Alternatively, the caller may leave a voicemail indicating a specific time at which the caller will place yet another call. This is an undesirable activity since it requires multiple calls, thus utilizing telecommunication capabilities in an inefficient manner. In addition, repeated or failed attempts to actually reach the callee are a waste of human resources since the parties must often call back and forth to each other a number of times before actually reaching the desired party. Therefore, it can be appreciated that there is a significant need for a system and method that can establish a telephone communication link when both parties are available to communicate. The present invention provides this and other advantages as will be apparent from the following detailed description and accompanying figures.

SUMMARY OF THE INVENTION

A system to specify user-selectable criteria for call processing is implemented on a telephone system, such as a public switched telephone network (PSTN). The user-specified call processing criteria is stored on a network that is accessible by the user for data entry and/or editing, and is also accessible by the PSTN to determine whether call processing criteria exists for the particular caller. The Internet provides a readily available data structure for storage of the user-selectable call processing criteria. The user can establish a database stored on the Internet in association with the user's telephone number and indicating the user-selectable call processing criteria for one or more potential callers.

The caller may be identified by caller identification data, such as automatic number identification (ANI). Based on the

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destination telephone number and the caller identification data, the PSTN accesses the Internet and examines an affiliation list corresponding to the destination telephone number. If the caller identification data is present in the affiliation list, the call may be processed in accordance with the user-specified criteria for that particular caller.

Both the caller and callee can specify user-selectable call processing criteria. The potential callee can specify call processing criteria for all incoming calls, such as providing a list of individuals from whom the person will accept calls, a list of individuals from whom the person will not accept calls, or conditional criteria, such as accepting or blocking calls during certain times of day or during certain periods of activity, such as when the user may be otherwise occupied and unwilling to accept an incoming call. In addition, the potential callee's computer activity may be monitored and the status of the computer as idle or active may be reported to the computer network. The caller indicates a desire to establish a communication link with the callee. The computer network accesses the caller's call processing criteria and the callee's call processing criteria. The call processing criteria for both the caller and callee are analyzed and when all conditions are met, a telephone communication link is established between an originating telephone associated with the caller and a destination telephone associated with the callee.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a computer system that includes components to implement the system of the present invention.

FIG. 2 is a functional block diagram outlining the operation of the present invention.

FIG. 3 is a functional block diagram of an alternate telecommunications configuration implementing the present invention.

FIG. 4 is a functional block diagram of another alternative telecommunications configuration implementing the present invention.

FIG. 5 is a functional block diagram providing details of the affiliation list of the system of FIG. 2.

FIG. 6 illustrates sample data provided in the list of FIG. 5.

FIG. 7 illustrates additional sample data provided in the list of FIG. 3.

FIG. 8 is a flowchart illustrating the operation of the system of FIG. 2.

FIG. 9 is a functional block diagram illustrating the system of the present invention to process a call in accordance with both a caller and callee call processing criteria.

FIG. 10 is a flowchart illustrating the operation of the system of FIG. 9.

**DETAILED DESCRIPTION OF THE
INVENTION**

Existing telephone technology does not provide the telephone subscriber with a technique for controlling access to the user's telephone. Features such as caller ID identify the caller, but do not control access to the user's telephone. Thus, the conventional telephone system forwards the user to extreme options. The user may answer all incoming calls or may choose not to answer any incoming calls. However, the present invention provides selective options in between these two extremes. The present invention combines telephone technology with Internet technology to allow the user

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to "filter" incoming calls based on user-selected criteria. In particular, the user may establish a series of lists, stored on the Internet in association with the user's telephone, to filter incoming calls and thereby control access to the user's telephone. In addition, it is possible to monitor the activity or status of both a caller and a callee and establish a communication link between the caller's telephone and the callee's telephone when status data indicates that both are available for a telephone call.

FIG. 1 and the following discussion are intended to provide a brief, general description of a suitable computing environment in which the invention may be implemented. Although not required, the invention will be described in the general context of computer-executable instructions, such as program modules, being executed by a personal computer. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with other computer system configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, and the like. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

With reference to FIG. 1, an exemplary system for implementing the invention includes a general purpose computing device in the form of a conventional personal computer 20, including a processing unit 21, a system memory 22, and a system bus 23 that couples various system components including the system memory to the processing unit 21. The system bus 23 may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The system memory 22 includes read only memory (ROM) 24 and random access memory (RAM) 25. A basic input/output system 26 (BIOS), containing the basic routines that helps to transfer information between elements within the personal computer 20, such as during start-up, may be stored in ROM 24.

The personal computer 20 further includes input/output devices 27, such as a hard disk drive 28 for reading from and writing to a hard disk, not shown, a magnetic disk drive 29 for reading from or writing to a removable magnetic disk 30, and an optical disk drive 31 for reading from or writing to a removable optical disk 32 such as a CD ROM or other optical media. The hard disk drive 28, magnetic disk drive 29, and optical disk drive 31 are connected to the system bus 23 by a hard disk drive interface 33, a magnetic disk drive interface 34, and an optical drive interface 35, respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer readable instructions, data structures, program modules and other data for the personal computer 20. Although the exemplary environment described herein employs a hard disk, a removable magnetic disk 30 and a removable optical disk 32, it should be appreciated by those skilled in the art that other types of computer readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROM), and the like, may also be used in the exemplary operating environment. Other I/O devices 27, such as a

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display 36, keyboard 37, mouse 38, and the like may be included in the personal computer 20 and function in a known manner. For the sake of brevity, other components, such as a joystick, sound board and speakers are not illustrated in FIG. 1.

The personal computer 20 may also include a network interface 39 to permit operation in a networked environment using logical connections to one or more remote computers, such as a remote computer 40. The remote computer 40 may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to the personal computer 20, although only a memory storage device 42 has been illustrated in FIG. 1. The logical connections depicted in FIG. 1 include a local area network (LAN) 43 and a wide area network (WAN) 44. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, the personal computer 20 is connected to the LAN 43 through the network interface 39. When used in a WAN networking environment, the personal computer 20 typically includes a modem 45 or other means for establishing communications over the wide area network 44, such as the Internet. The modem 45, which may be internal or external, permits communication with remote computers 46-50. In a networked environment, program modules depicted relative to the personal computer 20, or portions thereof, may be stored in the remote memory storage device 42 via the LAN 51 or stored in a remote memory storage device 52 via the WAN 44. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

The present invention is embodied in a system 100 illustrated in the functional diagram of FIG. 2. In a typical telephone communication, an originating telephone 102 is operated by the caller to place a call to a destination telephone 104. The originating telephone generates signals that are detected by a central office switch 106 operated by a local exchange carrier (LEC) 108. The LEC 108 is the telephone service provider for the calling party. The originating telephone 102 is coupled to the central office switch 106 via a communication link 110. As those skilled in the art can appreciate, the communication link 110 may be a hard-wired connection, such as a fiber optic, copper wire, or the like.

Alternatively, the communication link 110 may be a wireless communication link if the originating phone 102 is a cellular telephone or some other form of wireless telephone.

Similarly, the destination telephone 104 is coupled to a central office switch 116 operated by a local exchange carrier (LEC) 118. The destination telephone 104 is coupled to the central office switch 116 via a communication link 120. The communication link 120 may be a hard-wired communication link or a wireless communication link, as described above with respect to the communication link 110. The present invention is not limited by the specific form of communication link or central office switch.

The LEC 108 establishes a communication link with the LEC 118. As illustrated in FIG. 2, the communication link between the LEC 108 and the LEC 118 is through a long distance carrier (LDC) 124. The LEC 108 establishes a communication link 126 with the LDC 124 which, in turn, establishes a communication link 128 with the LEC 118. If

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the telephone call from the originating telephone 102 to the destination telephone 104 is not a long distance call, the LDC 124 is not required. In this case, the communication link 126 may couple the LEC 108 directly to the LEC 118. The use of the system 100 with other telephone configurations are illustrated in other figures.

To place a telephone call, the caller activates the originating telephone 102 to dial in the telephone number corresponding to the destination telephone number 104, thereby establishing the communication link 110 with the central office switch 106. In turn, the central office switch 106 establishes the communication link 126 (via the LDC 124, if necessary), thus establishing a communication link with the central office switch 116. In a conventional telephone system, the central office switch 116 establishes the communication link 120 to the destination telephone 104 causing the destination telephone to ring. If the callee picks up the destination telephone, a complete communication link between the originating telephone 102 and the destination telephone 104 has been established. This is sometimes referred to as "terminating" the telephone call. The specific telecommunications protocol used to establish a telephone communication link between the originating telephone 102 and the destination telephone 104 is well known in the art and need not be described herein. The preceding description of techniques used to establish the telephone communication link are provided only as a basis for describing the additional activities performed by the system 100.

With the system 100, the central office switch 116 does not initially establish the telephone communication link 120 with the destination telephone 104 to cause the telephone to ring. Instead, the central office switch 116 establishes a communication link 132 with a computer network 134, such as the Internet. As those skilled in the art can appreciate, the Internet is a vast multi-computer network coupled together by data links having various communication speeds. Although the Internet 134 may use a variety of different communication protocols, a well-known communication protocol used by the Internet is a Transmission Control Protocol/Internet Protocol (TCP/IP). The transmission of data on the Internet 134 using the TCP/IP is known to those skilled in the art and need not be described in greater detail herein.

The central office switch 116 utilizes conventional telephone communication protocols, which may be different from the TCP/IP communication protocols used by the Internet 134. The system 100 includes a communication interface 136 to translate data between the two communication protocols. The communication interface 136 includes a telephone interface portion 138 and an Internet interface portion 140. The telephone interface portion 138 is coupled to the central office switch 116 via the communication link 132 such that communications occurring on the communication link 132 utilize the telephone communication protocol. The Internet interface portion 140 communicates via the Internet using conventional communication protocols, such as TCP/IP.

The communication interface 136 may be implemented on a computing platform that functions as a server. The conventional components of the computing platform, such as a CPU, memory, and the like are known to those skilled in the art and need not be described in greater detail herein. The telephone interface portion 138 may comprise an Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) to communicate with the central office switch 116. The ISDN PRI, which may be implemented on a plug-in computer card, provides information to the tele-

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phone interface portion 138, such as automatic number identification (ANI), dialed number identification service (DNIS), and the like. As is known, ANI provides the telephone number of the caller's telephone (e.g., the originating telephone 102) while the DNIS allows the number the caller dialed (e.g., the destination telephone 104) to be forwarded to a computer system. These data may be considered "keys" which may be used by the system 100 to identify the caller and the callee. Thus, the central office switch 116 provides information which may be used to access the affiliation list 150 for the destination telephone 104.

The Internet interface portion 140 may be conveniently implemented with a computer network card mounted in the same computing platform that includes the ISDN PRI card. However, it is not necessary for satisfactory operation of the system 100 that the interface cards be co-located in the same computing platform. It is only required that the telephone interface portion 138 communicate with the Internet interface portion 140. The Internet interface portion 140 receives the incoming data (e.g., the ANI, DNIS, and the like) and generates Internet compatible commands. The specific form of the Internet commands using, by way of example, TCP/IP, are within the scope of knowledge of one skilled in the art and need not be described herein. As will be described below, data provided by the central office switch 116 will be used to access data on the Internet and use that data to determine the manner in which a telephone call will be processed.

The Internet 134 stores an affiliation list 150, which may be established by the user of the destination telephone 104. Data stored within the affiliation list 150 is accessed by the central office switch 116 to determine the manner in which the call from the originating telephone 102 will be processed. Details of the affiliation list 150 are provided below. The Internet 134 also includes an Internet controller 152 which communicates with a callee computer 154 via a network link 156. The communication between the callee computer 154 and the Internet 134 is a conventional communication link used by millions of computers throughout the world. For example, the callee computer 154 may be a personal computer (PC) containing a communication interface, such as a modem (not shown). The network link 156 may be a simple telephone communication link using the modem to communicate with the Internet 134. The Internet controller 152 functions in a conventional manner to communicate with the callee computer 154 via the network link 156. Although the communication link 132 and the network link 156 are both communication links to the Internet, the network link 156 is a conventional computer connection established over a telephone line, a network connection, such as an Ethernet link, or the like. This conventional network link 156 is significantly different from the communication link 132 between the central office switch 116 and the Internet 134. The central office switch 116 establishes the communication link 132 to access data on the Internet and uses that accessed data to determine how to process an incoming call for the destination telephone 104. The network link 156 is a computer-to-computer connection that may simply use a telephone as the physical layer to establish the network link.

In the system 100, the central office switch 116 receives an incoming call from the originating telephone 102 via the central office switch 106 and, optionally, the LDC 124. Rather than immediately establishing the communication link 120 and generating a ring signal at the destination telephone 104, the central office switch 116 establishes the

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communication link 132 and communicates with the Internet 134 via the communication interface 136. The purpose of such communication is to access the affiliation list 150 and thereby determine the manner in which the user of the destination telephone 104 wishes calls to be processed.

FIG. 3 illustrates the system 100 for a telephone system configuration in which the originating telephone 102 and the destination telephone 104 are both serviced by the same local exchange carrier 108. The originating telephone 102 establishes the communication link 110 with the central office switch 106 in the manner described above. The central office switch 106 establishes the communication link 126 directly with the central office switch 116 without the need for the LDC 124 (see FIG. 2). The central office switch 116 operates in the manner described above. That is, the central office switch 116 does not immediately establish the communication link 120, but does establish the communication link 132 with the Internet 134. For the sake of simplicity, FIG. 3 does not illustrate the communication interface 136. However, those skilled in the art will appreciate that the central office switch 116 accesses the affiliation list 150 via the communication interface 136 (see FIG. 2).

For the sake of simplicity, FIG. 3 also does not show the Internet controller 152 and the callee computer 154. However, those skilled in the art can appreciate that those portions of the system may also be present in the embodiment illustrated in FIG. 3. However, it should be noted that the callee computer 154 and the Internet controller 152 need only be used to edit the affiliation list 150. The call processing by the central office switch 116 does not depend on the presence of the Internet controller 152 or the callee computer 154. That is, the central office switch 116 accesses the affiliation list 150 via the communication interface 136 regardless of the presence of the callee computer 154.

In yet another telephone system configuration, illustrated in FIG. 4, the originating telephone 102 and the destination telephone 104 are not only serviced by the same local exchange carrier 108, but are connected to the same central office switch 116. However, the fundamental operation of the system 100 remains identical to that described above with respect to accessing the affiliation list 150. That is, the originating telephone 102 establishes the communication link 110 with the central office switch 116. However, the central office switch 106 need not establish the communication link 126 with any other central office switch since the destination telephone 104 is also connected to that same central office switch.

In this telephone system configuration, the central office switch 116 accesses the affiliation list 150 on the Internet 134 via the communication link 132 (see FIG. 2) in the manner described above. For the sake of simplicity, FIG. 4 does not illustrate the communication interface 136. However, those skilled in the art will recognize that the communication interface 136 operates to convert communication signals between telephone protocol used by the central office switch 106 and the Internet communication protocol used by the Internet 134. In addition, FIG. 4 also does not illustrate the Internet controller 152 and the callee computer 154. As noted above with respect to FIG. 3, the Internet controller 152 and callee computer 154 are not necessary for proper operation of the system 100. The callee computer 154 is typically used in the system 100 to edit the affiliation list 150.

The affiliation list 150 is illustrated in greater detail in the functional block diagram of FIG. 5. The affiliation list comprises a series of sublists, illustrated in FIG. 3 as a

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forward list 160, a reverse list 162, a block list 164, and an allow list 166. The forward list 160 contains a list of Internet subscribers whose Internet activity a user wishes to monitor. This list is sometimes referred to as a "buddy" list. When the user operates the callee computer 154 on the Internet 134, the Internet controller 152 accesses the forward list 160 via an affiliation list input/output (I/O) interface 170 to determine which Internet subscribers contained within the forward list are currently active on the Internet 134. In conventional Internet operation, the Internet controller 152 sends a message to the callee computer 154 indicating which Internet subscribers on the forward list 160 are currently active on the Internet 134.

The forward list 160 is a list of Internet subscribers whose activity is reported to the user. Other Internet subscribers may have their own forward list (not shown) and may monitor the Internet activity of the user. When the user accesses the Internet 134 with the callee computer 154, that activity can be monitored by others. With the system 100, it is possible to determine who is monitoring the user's Internet activity. The reverse list 162 contains a list of Internet subscribers who have placed the user in their forward list. That is, the reverse list 162 contains a list of Internet subscribers who have placed the user in their buddy list. With the reverse list 162, the user can determine who is monitoring his Internet activity.

The block list 164 contains a list of Internet subscribers that the user does not want to monitor his Internet activity. That is, the user's Internet activity will not be provided to any Internet subscriber contained in the block list 164. Thus, even if a particular Internet subscriber has placed the user on their forward list, the presence of that particular Internet subscriber's name on the block list 164 will prevent the user's Internet activity from being reported to the particular Internet subscriber. The use of the block list 164 provides certain security assurances to the user that their Internet activity is not being monitored by any undesirable Internet subscribers.

The allow list 166 contains a list of Internet subscribers for whom the user may wish to communicate with but whose Internet activity the user does not wish to monitor.

The system 100 combines the capabilities of the affiliation list 150 with telephone switching technology to filter incoming calls to the destination telephone 104. For example, the user may specify that only calls from Internet subscribers contained in the forward list 154 may contact the user via the destination telephone 104. Alternatively, the user may specify that a calling party whose name is contained in the forward list 160 or the allow list 166 may place a call to the destination telephone 104. As will be discussed in greater detail below, the system 100 allows the user to create general conditional processing, such as blocking calls or allowing calls. However, the user can also create specific conditional processing for individual callers or based on the user's current status or preferences.

The central office switch 116 accesses the affiliation list 150 via the communication link 132 and determines whether the calling party is in a list (e.g., the forward list 160) that the user wishes to communicate with. If the calling party is contained within an "approved" list, the central office switch 116 establishes the communication link 120 and sends a ring signal to the destination telephone 104. Thus, the user can pick up the telephone with the knowledge that the calling party is an individual with whom the user wishes to communicate.

Conversely, if the calling party is not contained within an approved list, such as the forward list 160 or the allow list

166, the central office switch 116 will not establish the communication link 120 with the destination telephone 104. Thus, the user will not be bothered by undesirable phone calls. In one embodiment, the central switch office simply will not establish the communication link 120 and the calling party will recognize that the call did not go through. Alternatively, the central office switch 116 may generate a signal indicating that the destination telephone 104 is busy. In this alternative embodiment, the calling party will receive a busy signal on the originating telephone 102. Thus, the user has the ability to filter incoming calls by creating a list of those individuals with whom the user wishes to communicate.

It should be noted that the affiliation list 150 may be dynamically altered by the user to add or delete individuals, change individuals from one list to another, or to change the call processing options for a particular list depending on the user's preferences. For example, the user may want to accept all calls from any source at certain times of the day. Under these circumstances, the user can edit the allow list 166 to accept calls from any calling party. Alternatively, the user may still maintain the block list 164 such that calls will not be processed from certain specified parties even if the user is willing to accept calls from any other source. Under other circumstances, the user may not wish to communicate with any individuals. In this instance, the user may indicate that all calling parties are on the block list 164. Thus, the central office switch 116 will access the Internet 134 in real-time and review data in the affiliation list 150 to thereby process incoming calls for the user in accordance with the rules present in the affiliation list.

The discussion above provides examples of the central office switch 116 processing calls from a calling party in accordance with their presence or absence of certain lists in the affiliation list 150. For example, a call from a party on the forward list 160 will be connected to the destination telephone 104 (see FIG. 2) while a call from a party on the block list 164 will not be put through to the destination telephone. However, the system 100 also allows the selection of call processing options on an individual basis rather than simply on the presence or absence in a particular list. For example, the user can edit the allow list 166 to specify that certain individuals are "allowed" while other individuals may be allowed, conditionally allowed, or blocked all together. If the individual calling party has an associated status indicating that they are allowed, the central office switch 116 will process the incoming call and connect it to the destination telephone 104. If the individual calling party has an associated blocked status, the central office switch 116 will not process the call and will not connect it to the destination telephone 104.

Furthermore, the user may attach conditional status to individual callers or to calling lists. Conditional status may be based on factors, such as the time of day, current availability of the user, work status, or the like. For example, the user may accept calls from certain work parties during specified periods of the day (e.g., 9:00 a.m.–11:00 a.m.), block calls from selected calling parties during other periods of time (e.g., 12:00–1:00 p.m.), or allow calls during a business meeting only from certain calling parties (e.g., the boss). These conditional status criteria may be applied to individuals or to one or more lists in the affiliation list 150.

FIG. 6 illustrates sample data entries in the allow list 166. The allow list 166 may include data, such as a name, Internet subscriber name, and one or more phone numbers associated with the individual data entry. It should be noted that the calling party need not have an Internet subscriber name for

proper operation of the system 100. That is, the central office switch 116 accesses the allow list 166 utilizing the calling party number and need not rely on any email addresses or other Internet subscriber identification for proper operation. The allow list 166 may also include an email alias in addition to or in place of the Internet subscriber name. Some Internet subscribers prefer to "chat" with other subscribers utilizing an alias rather than their actual Internet subscriber name. The data of FIG. 6 illustrates one possible embodiment for the allow list 166. However, those skilled in the art can appreciate that the allow list 166 may typically be a part of a large database (not shown). Database operation is well known in the art, and need not be described in greater detail herein. The database or other form of the forward list 160 may be satisfactorily implemented using any known data structure for storage of data. For example, the various lists (e.g., the allow list 166, the reverse list 162, the block list 164 and the allow list 166) may all be integrated within a single database structure. The present invention is not limited by the specific structure of the affiliation list 150 nor by the form or format of data contained therein.

Rather than incoming call filtering on the basis of presence in a particular list, such as the allow list 166, as illustrated in FIG. 6, the affiliation list 150 may contain status data on an individual basis. In this event, the central office switch 116 (see FIG. 2) processes the incoming call in accordance with the designated status for that individual. In the example illustrated in FIG. 7, the affiliation list 150 contains one individual with an "allowed" status, one individual with a "blocked" status, and one individual with a "conditional" status based on user-selected criteria. In the example of FIG. 7, the user-selected criteria may be based on the particular phone from which the call is originating as well as the time of day in which the call is originated. For example, the user may wish to allow all calls from a particular number, such as an caller's work number. However, calls from another number, such as the caller's home phone, may be blocked. Other calls, such as from a caller's cellular telephone, may be allowed only at certain times of day. FIG. 7 is intended to illustrate some of the call processing options that are available to the user. As can be appreciated, a variety of different conditional status criteria may be applied to one or more potential calling parties. However, a common feature of the system 100 is that the telecommunication system. (e.g., the central office switch 116) determines calling pat status on the basis of information stored on the Internet and processes the incoming call in accordance with the user-specified criteria. Moreover, the system 100 operates in real-time to process the incoming call in accordance with the user-specified criteria.

The Internet 134 may be conveniently used as a storage area for the caller specified criteria. The advantage of such data storage on the Internet is that the data is widely accessible to the user. This provides a convenient mechanism for entering new caller data or editing existing caller data. The user can access the affiliation list 150 with the callee computer 154 via the network link 156. In contrast, the central office switch 116 may access the affiliation list 150 via the communication link 132, which may typically be a high-speed communication link. In addition, FIGS. 2, 4, and 5 illustrate the central office switch 116 as the telecommunication component that accesses the Internet 134. It is convenient for operational efficiency to have the central office switch (e.g., the central office switch 116) to which the destination telephone 104 is connected perform such Internet access. It is at this stage of the telephone call processing that the telecommunication system may most conveniently

determine the user-specified caller status. However, those skilled in the art will recognize that the status check may be performed by other portions of the telecommunication system, such as the central office switch **106**, the LDC **124**, or the like. Thus, the present invention is not limited by the particular telecommunication component that establishes the communication link with a network which the user-specified caller status data is stored.

In addition, the system **100** can be readily implemented as an "add-on" component of the telecommunication system and need not be integrated with the central office switch **116**. For example, the conventional central office switch provides the ability to divert calls based on certain call conditions, such as "Call Forward No Answer," which may be used to divert an incoming call to voicemail or "Call Forward Busy," which may also divert the incoming call to voicemail. To implement the system **100** with an add-on processor, the system may optionally include a Switch to Computer Applications Interface (SCAI) **174** and a call processor **176**. The dashed lines of FIG. **4** are intended to illustrate an alternative configuration of the system **100**. This alternative configuration can also be implemented with other telephone system configurations, such as illustrated in FIGS. **2** and **3**. The SCAI **174** is a telecommunication protocol that allows switches to communicate with external computers. Data, such as caller and callee telephone numbers, and status information, such as Call Forward Busy, are provided to the SCAM **174** by the central office switch **116**.

The call processor **176** performs the functions described above to process the call in accordance with the user-specified criteria. That is, the call processor **176** receives caller and callee data from the SCAI **174** and accesses the affiliation list **150** via the communication interface **136** (see FIG. **2**). The call processor **176** uses user-specified call processing criteria to generate instructions for the central office switch **116**. The instructions are provided to the central office switch **116** via the SCAI **174**. Those skilled in the art will appreciate that the SCAI **174** is but one example of the Open Application Interface (OAI) that can be used with the central office switch **116**.

As noted above, the system **100** can process a call intended for the destination telephone **104**, block a call, or generate a busy signal at the originating telephone **102**. However, the system **100** also operates with voicemail and permits a number of different customized outgoing messages. FIG. **4** illustrates a voicemail system **180** having a storage area containing one or more outgoing messages **182**. For example, the voicemail system **180** can play an outgoing message **182** informing the caller that "the party you are calling only accepts calls from designated callers. Please leave a message." If calls are blocked only at certain times, the outgoing message **182** can say "the party you are calling does not accept calls between 11:30 a.m. and 1:00 p.m. Please leave a message or call back after 1:00 p.m." The outgoing message can also reflect callee availability by playing a message such as "The party you are calling is in a meeting. Please leave a message or call back in X minutes" where X reflects the amount of time before the meeting is expected to end. That information can be manually provided to the affiliation list **150** by the user or automatically derived from a computerized scheduling program on, by way of example, the callee computer **154** (see FIG. **2**).

Computerized scheduling programs, such as Microsoft® D Schedule Plus, can be used on the callee computer **154** (see FIG. **2**). It is known that such scheduling programs can be accessed via a computer network or downloaded to a hand-held computing device to track appointments. The

system **100** can access such computerized scheduling programs and download appointments and scheduled meetings into the affiliation list **150**. The outgoing messages **182** can be automatically selected on the basis of the user's computerized schedule. Thus, the system **100** permits the user to schedule his day (e.g., meetings, lunch time, in office/available for calls, in office/unavailable for calls, etc.) on a computerized scheduling program and to process calls in accordance with the computerized schedule and even select outgoing messages automatically based on the user's schedule.

The operation of the system **100** is illustrated in the flowchart of FIG. **7**. At a start **200**, the calling party has placed a call from the originating telephone **102** (see FIG. **2**) to the destination telephone **104**. In step **202**, the central office switch **116** has received call data from the originating telephone **102**. The received call data includes the destination telephone number of the destination telephone **104** and identification data indicating the originating telephone **102** as the source of the present call. Use of automatic number identification (ANI) is a well-known technique for providing identification data indicating the originating telephone **102** as the source of the present call. While the specific implementation of ANI data, sometimes referred to as caller ID, may not be uniformly implemented throughout the United States, the ANI data is typically delivered between the first and second rings. In the present invention, the central office switch **116** (see FIG. **2**) does not initiate a ring signal to the destination telephone **104** until after determining the status of the calling party based on the ANI. In future implementations, telecommunication companies may transmit other forms of caller identification, such as caller name, Internet address, email alias, or the like. The system **100** operates satisfactorily with any form of caller identification. The only requirement for the system **100** is that some form of caller identification be provided. The call is processed in accordance with the user-specified criteria in the affiliation list **150** for the identified caller.

In step **204**, the central office switch **116** (see FIG. **2**) establishes the communication link **132** with the Internet **134**. Although step **204** illustrates the system **100** as actively establishing the communication link **132** with the Internet **134**, those skilled in the art will recognize that the system **100** can utilize a continuous high-speed data link between the central office switch and the Internet. Thus, it is not necessary to establish a network link for each and every incoming call processed by the central office switch **116**. As previously described, the communication interface **136** translates data between the telephone protocol and the Internet protocol. In step **206**, the system **100** accesses the affiliation list **150** for the user (i.e., the called party). In an exemplary embodiment, the telephone number of the destination telephone **104** or other callee identification is used as an index or pointer to a specific location within the database where the affiliation list **150** for the particular user may be found. Database operation in general, and techniques for locating specific items within a database in particular are known to those skilled in the art and need not be described herein.

In decision **210**, the system **100** determines whether the caller identification data is on the forward list **160** (see FIG. **3**). If the caller identification data is present in the forward list, the result of the decision **210** is YES. In that event, the system **100** proceeds to FIG. **6B** where the call is processed in accordance with the rules associated with the forward list **160**.

If the caller identification data is not present in the forward list **160** (see FIG. **3**), the result of decision **210** is

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NO. In that event, the system 100 moves to decision 212 to determine whether the caller identification data is in the allow list 166. If the caller identification data is present in the allow list 166, the result of decision 214 is YES. In that event, the system 100 proceeds to decision 216 where the call is processed in accordance with the rules associated with the allow list 166. If the caller identification data is not present in the allow list 166, the result of decision 216 is NO.

In decision 218, the system 100 determines whether the caller identification data is present in the reverse list 162. If the caller identification data is present in the reverse list 162, the system 100 proceeds to the step 220 where the call is processed in accordance with the rules associated with the reverse list 162. If the caller identification data is not present in the reverse list, the result of decision 218 is NO. In that event, the system moves to decision 216 to determine whether the caller is present on the block list 164. If the caller is present on the block list 164, the result of decision 222 is YES. In that event, the system proceeds to step 224 where the call is processed in accordance with the rules associated with the block list. If the caller identification data is not present in the block list 164, the result of decision 222 is NO. This indicates that the caller identification data is not present in any of the user-specified lists in the affiliation list 150. In that event, the system moves to step 226 where the call may be processed in accordance with user-specified rules of processing anonymous or unidentified calls. The flowchart of FIG. 8 illustrates the operation of the system 100 with multiple lists wherein the call processing rules are designated for each list. In this embodiment, the call is processed on the basis of the presence or absence of the caller identification data in a particular list. However, as previously discussed, the affiliation list 150 (see FIG. 5B) may include user-specified status criteria for individual callers. In this embodiment, the system 100 processes the call on the basis of the user-specified status criteria associated with the individual caller rather than on the basis of the caller's presence or absence in a specific list. In that event, the system 100 may simply access the user affiliation list (see step 206 in FIG. 7) and process the call in accordance with the user-specified status criteria for the individual caller. If the caller identification data is not present in the affiliation list 160, the call may be processed using user-specified call processing criteria for unidentified callers, as shown in step 226.

Thus, the system 100 allows the user to specify call processing rules for a plurality of different caller lists or for individual callers within a list. The caller lists may be readily edited in accordance with the changing desires of the user. The user may alter the call processing rules in accordance with various times of day, work conditions, or even the personal mood of the user. For example, the user may process all calls during certain times of the day, such as when the user is at work. However, when the user arrives home, subsequent calls may be processed in accordance with a different set of rules, such as accepting no calls during dinner time or after a certain time at night.

These rules may be applied differentially to different ones of the list in the affiliation list 150. For example, the user may accept calls from any calling party on the forward list 160 (see FIG. 3) or the allow list 166 during the evening hours. However, after a certain time at night, the caller may accept calls only from calling parties on the forward list 160. Thus, the system 100 allows great flexibility in the user selection of calling rules and lists. The system 100 allows the user to filter incoming calls in accordance with generalized rules or in accordance with highly specific rules.

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In addition to filtering incoming calls to the destination telephone 104, the system 100 can monitor the status or activity of both the caller and the callee and establish a communication link between the originating telephone 102 and the destination telephone 104 when the status data indicates that both the caller and callee are available for a telephone conversation. The system 100 has been previously described with respect to callee status monitoring and processing of incoming calls in accordance with the user-selected (i.e., the callee-selected) call processing criteria. Similar status monitoring can be performed for the caller. As illustrated in FIG. 9, the system 100 may include a caller computer 184, which is coupled to the Internet via the communication link 132. For the sake of clarity, FIG. 9 illustrates the callee computer 154 and the caller computer 184 as connected to the Internet 134 through a single Internet controller 152. However, those skilled in the art will appreciate that the Internet 134, or any computer network, includes many network controllers that function as a gateway to the network. Thus, the system 100 typically includes a large number of Internet controllers 152.

In addition, for the sake of clarity, Figure illustrates only a single affiliation list 150. However, those skilled in the art will appreciate that separate affiliation lists exist for the originating telephone 102 and the destination telephone 104. The central office switch 116 (or the call processor 176) access the appropriate affiliation list via the network connection 132 and apply the appropriate call processing rules for each telephone.

FIG. 9 also illustrates a keyboard 154a and mouse 154b coupled to the callee computer 154 for use in a conventional fashion. Similarly, the caller computer 184 includes a keyboard 184a and a mouse 184b. The computer operating system, such as the Windows® operating system, is capable of monitoring user activity on the computer. For example, the operating system on the callee computer 154 can detect user activity on the keyboard 154a or the mouse 154b. By monitoring this activity, the operating system can determine the user's status and activate certain software programs, such as a screen saver, when no user activity has been detected for a certain period of time. Under these circumstances, the operating system may determine that the callee computer 154 has entered an "idle" state. Similarly, operating system on the caller computer 184 may perform similar functions to determine user activity on the caller computer. Using the principles of the present invention, the callee computer 154 and the caller computer 184 may report the current status to the affiliation list 150 for each respective computer.

The system 100 can monitor computer activity and generate signals to both the originating telephone 102 and the destination telephone 104 when the callee computer 154 and the caller computer 184 are not in the idle state. The fact that both computers' are not in the idle state indicates that the users of each respective computer may be available for a telephone conversation. In addition, the system 100 can apply call processing rules that may also govern operation of the telephone portion of the system 100. For example, the callee computer 154 may be in an "active" state (as opposed to the idle state) but the user has indicated that he should not be disturbed at the present time. Thus, the central office switch 116 or the call processor 176 accesses the affiliation list 150 for the destination telephone 104 to determine the callee-selected call processing criteria. In addition, the central office switch 116 or the call processor 176 can access the affiliation list 150 for the caller and apply any caller-selected call processing rules. For example, the caller computer 184

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may be in the active state, but the caller status in the affiliation list 150 may indicate that the caller is in a meeting and is, therefore, unavailable for a telephone call with the callee. In this manner, the system 100 can monitor computer activity and determine when the caller and callee may both be available for a telephone call and further applies call processing criteria for both the caller and callee. The call processing criteria for the caller and callee as well as the current status of the callee computer 154 and the caller computer 184 are stored within the respective affiliation lists 150 on the Internet 134. This data may be accessed by the central office switch 116 or the call processor 176 via the network connection 132 in the manner previously described.

In operation, the system allows a caller to indicate a desire to establish a telephone communication link with a specified callee. The caller can use the originating telephone 102 or the caller computer 184 to initiate the call processing by the system 100. The system 100 monitors the caller and callee activities and call processing rules and, when appropriate for both parties, establishes a telephone communication link by sending signals from the central office switch 116 to the originating telephone to generate a ring signal. The central office switch 116 also generates appropriate signals to generate ring signal at the destination telephone 104.

As can be appreciated, the originating telephone 102 communicates with the central office switch 116 using the communication link 110 while the caller computer 184 communicates with the Internet 134 using the communication link 132. The communication link 132 may be a second telephone line, a network connection, such as an Ethernet connection, or the like. If the user has two telephone lines, the telephone number of the telephone (e.g., the destination telephone 104) can be different from the telephone number associated with the computer (e.g., the callee computer 154). However, the system 100 must be aware of an association between the telephone and the computer. This is particularly important if the status of the computer (i.e., idle or active) is used as one of the call processing criteria. The system 100 can monitor the activity of a computer (e.g., the callee computer 154) in order to establish a telephone communication link with an associated telephone (e.g., the destination telephone 104). It is of no value to monitor a user's computer status at one location and call a completely unrelated telephone at a different location. For example, it is of no value to monitor the callee's computer at work and then to call the callee's home telephone number.

In other implementations, such as with a home computer, only a single telephone line may serve the function of both the communication link 110 and the communication link 132. Under these circumstances, the caller may use the caller computer 184 to indicate a desire to establish the telephone communication link and then must terminate the communication link 132 so that the central office switch may generate the appropriate signals on the communication link 110 at a point in time when the callee call processing criteria and the caller call processing criteria are both met. It should be further noted that this implementation will preclude the use of the status (i.e., idle or active) of the caller computer 184 since the communication link 132 is not active.

Similarly, the destination telephone 104 and the callee computer 154 may be connected to the central office switch 116 and the Internet 134 via separate communication links (i.e., the communication link 120 and the communication link 132, respectively). However, the system 100 may also be implemented with a single phone line. The callee may use the callee computer 154 and the communication link 132 to generate or edit the callee call processing criteria in the

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affiliation list 150. However, the user must then terminate the communication link 132 to permit the central office switch 116 to establish the communication link 120. As noted above, a single phone line precludes the use of computer status monitoring (i.e., idle or active) for the callee computer 154 since the status cannot be monitored via the communication link 132.

The operation of the system 100 to establish a communication link with both the originating telephone 102 and the destination telephone 104 is illustrated in the flowchart of FIG. 10 where, at a start 250, it is assumed that the caller and callee both have data in their respective affiliation lists. As previously noted, the affiliation list 150 for each individual may comprise separate sublists, such as illustrated in FIG. 5, or a single data structure containing call processing criteria, such as allowing or blocking individual calls (see FIG. 7) or establishing conditional criteria, such as time restrictions, current user status (e.g., in a meeting), or the current status of the user's computer (e.g., the idle or active status of the callee computer 154). Furthermore, as previously noted, user status can be automatically provided to the affiliation list 150 by a computerized schedule program.

In step 252, the caller indicates a desire to establish a telephone communication link with the callee. In a conventional communication system, the caller picks up the originating telephone and dials the telephone number for the destination telephone 104. However, in accordance with this aspect of the system 100, the caller may indicate the desire to establish a telecommunication link using the caller computer 184 and placing the callee telephone number (i.e., the telephone number of the destination telephone 104) on a call list, such as the forward list 160 (see FIG. 5). By placing the callee on the forward list, the system 100 can access the callee affiliation list to determine whether the callee computer 154 is active on the Internet.

With the callee telephone number (i.e., the telephone number of the destination telephone 102) placed on the call list, the system 100 can determine the call processing criteria of both the caller and the callee, and process the request for a telephone call in accordance with those rules. In step 254, the system 100 establishes a communication link with the Internet 134. As previously noted, the central office switch 116 may directly establish the communication link 132 with the Internet 134 or may use the SCAI 174 and call processor 176 to communicate with the Internet. It should be noted that the telephone portion of the system may have a continuous data link with the Internet via the central office switch 116 or the call processor 176. Thus, it is not necessary to continuously establish and tear down the communication link 132.

In step 258, the system 100 accesses the callee affiliation list 150. In step 260, the system 100 accesses the caller affiliation list 150. As previously noted, the physical location of each affiliation list is unimportant to the satisfactory operation of the system. The only requirement is that the affiliation list is accessible via the computer network, such as the Internet 134.

In decision 262, the system 100 applies the callee call processing criteria and determines whether the present calling conditions meet the callee criteria. This includes testing whether the caller is contained within one of the sublists illustrated in FIG. 5 or if the status associated with the call origination data indicates that the caller is allowed or blocked, or the like. If the present calling conditions do not meet the callee criteria, the result of decision 262 is NO. In that event, the system 100 can return to step 258 to again

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access the callee affiliation list. As those skilled in the art can appreciate, the callee affiliation list may be updated by the callee (typically via the callee computer 154) which may change the result of decision 262.

If the current call does meet the callee call processing criteria, the result of decision 262 is YES. In that event, the system 100 uses the data from the caller affiliation list 150 to determine whether the present call meets the caller call processing criteria. Although the caller indicated a desire to establish a telephone link with the callee, the caller may not be available for an immediate phone call. For example, the caller may have a meeting scheduled to begin, but expects to be available for a phone call following the meeting. The caller can manually set the call processing criteria, such as indicating the desired time of the telephone call. Alternatively, the caller call processing criteria may be automatically supplied to the caller affiliation list 150 through the use of a computerized scheduling program or the like. The system 100 may also monitor the status of the caller computer 184 to determine caller availability. For example, the caller may indicate an availability for a phone call after a predetermined time. The system 100 can detect the change in the state of the caller computer 184 from the idle state to the active state and interpret that as an indication that the caller is now available for a telephone call. The system can apply these conditions individually or in various combinations to determine the availability of the caller and callee. If the call does not meet the caller call processing criteria, the result of decision 264 is NO. In that event, the system 100 can return to step 258 to access the affiliation lists for the callee and caller, respectively, and thus continuously monitor the callee and caller call processing criteria to determine an appropriate time to make a phone call.

If the call does meet the caller call processing criteria, the result of decision 264 is YES. In that event, in step 266 the system 100 causes the central office switch 116 to send the appropriate ring signals to the originating telephone 102 and ring signals to the destination telephone 104. In this manner, the telephone system follows the call processing guidelines of both caller and callee stored on a computer network to control the processing of the call on the telephone network.

Although the example illustrated in FIG. 10 illustrates a continuous process of checking call processing criteria against the current call conditions, those skilled in the art appreciate that other possible actions can be taken by the system 100. For example, the caller may be on the block list 164 (see FIG. 5). In this condition, the call will never meet the callee call processing criteria. The system 100 thus will never establish a communication link. The system 100 can send a message to the caller computer 184 indicating that the callee does not accept calls in this manner and to leave a message on the voicemail system 180. Alternatively, the system 100 can establish a telephone communication link to the originating telephone 102 and provide a similar message. As discussed above with respect to FIG. 4, a variety of voice mail messages can be provided to the user. The system 100 may establish a telephone communication link to the originating telephone 102 and play the appropriate outgoing message 182 (see FIG. 4). As noted above, the system 100 can apply call processing rules derived from any source, such as the current status (e.g., idle or active) of the callee computer 154 or the caller computer 184, the presence or absence on one of the sublists in FIG. 5 (e.g., the block list 164), the status of one party (e.g., the allowed status of the caller), callee or caller status data provided by computerized scheduling systems, or the like. The system 100 advantageously allows multiple forms of call processing criteria to

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be stored in the network, such as the Internet 134, and accessed by the telephone system, such as the central office switch 116 or the call processor 176. Those skilled in the art will also recognize that the embodiment of the system 100 shown in FIG. 9 can be implemented with various telephone system configurations, such as those illustrated in FIGS. 2 and 3, or any other telephone system configuration. Furthermore, the system 100 is not limited by the specific component of the telephone system that establishes the network link 132 with the affiliation list 150. Although FIG. 9 illustrates the central office switch 116 or the call processor 176 as the component that establishes the network link, those skilled in the art will recognize that other components, such as the central office switch 106 (see FIG. 2), the LDC 124, or the like can establish the network link 132. Thus, the system 100 is not limited by the specific component of the telephone communication system that establishes the network link 132.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. For example, the system discussed herein uses, by way of example, the Internet 134 to store the affiliation list 150. However, the system 100 can be implemented with other computer networks or as a portion of a telephone switch, such as the central office switch 116. The telephone service provider can provide a customer with an affiliation list and some means to control the list as a value-added telephone service. The central office switch 116 accesses the internal affiliation list and processes the incoming calls in accordance with the user-specified criteria contained therein. Accordingly, the invention is not limited except as by the appended claims.

What is claimed is:

1. In a system that includes a telephone network and a computer network with one or more users, wherein each user is connected through a user computer the computer network and is logically connected through the computer network to the telephone network, a method of determining when to establish telephone communication between two parties, at least one of whom is a user connected to said computer network, comprising:

- at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party;
- at the computer network, monitoring activity of a user computer connected to the computer network and associated with the second party;
- at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party;
- at the computer network, using the set of a pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party; and
- using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

2. A method as recited in claim 1, further comprising, at the computer network, monitor activity of a user computer

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connected to the computer network and associated with the first party, wherein using the set of pre-determined rules is also performed using information regarding the monitored activity of the user computer of the first party.

3. A method as recited in claim 1, wherein using the information processed at the computer network to facilitate connecting the call comprises sending control signals to the telephone network to cause the telephone network to connect the call.

4. A method as recited in claim 1, wherein the predetermined rules are associated with an affiliation list of the second party and wherein the first party is referenced by the buddy list.

5. A method as recited in claim 1, wherein monitoring activity of a user computer connected to the computer network and associated with the second party comprises monitoring activity of an input device of the user computer.

6. A method as recited in claim 1, wherein the pre-defined rules specify whether the second party accepts telephone calls from the first party.

7. In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a computer program product comprising:

- a computer readable medium for carrying computer executable instructions for implementing at the computer network a method of determining when to establish telephone communication between two parties, at least one of whom is a user connected to said computer network, and wherein said method comprises:

- at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party;

- at the computer network, monitoring activity of a user computer connected to the computer network and associated with the second party;

- at the computer network, storing a set of predetermined rules for determining when the second party is available to take a call from the first party; and

- at the computer network, using the set of predetermined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party.

8. A computer program product as recited in claim 7, wherein the method further comprises using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

9. A computer program product as recited in claim 7, wherein the pre-determined rules specify whether the second party accepts telephone calls from the first party.

10. A computer program product as recited in claim 7, wherein the pre-determined rules define how the telephone call is to be processed based on the time of the day of the telephone call.

11. A computer program product as recited in claim 7, wherein the method further comprises, at the computer network, monitoring activity of a user computer connected to the computer network and associated with the first party, wherein using the set of pre-determined rules is also performed using information regarding the monitored activity of the user computer of the first party.

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12. In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a method of determining when to establish telephone communication between two parties, each of whom is a user connected to said computer network, comprising:

- at the computer network, monitoring activity of the user computers associated with both a first and a second party;

- at the computer network, receiving information from the telephone network that the first party is originating a call to the second party;

- at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party;

- at the computer network, using the set of pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computers of the first and second parties, to determine when the second party is available to take the call originated by the first party; and

- using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

13. A method as recited in claim 12, wherein using the information processed at the computer network to facilitate connecting the call comprises sending control signals to the telephone network to cause the telephone network to connect the call.

14. A method as recited in claim 12, wherein the predetermined rules are associated with an affiliation list of the second party and wherein the first party is referenced by the buddy list.

15. A method as recited in claim 12, wherein monitoring activity of a user computer connected to the computer network and associated with the second party comprises monitoring activity of an input device of the user computer associated with the second party.

16. A method as recited in claim 12, wherein the pre-defined rules specify whether the second party accepts telephone calls from the first party.

17. In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a computer program product comprising:

- a computer readable medium for carrying computer executable instructions for implementing at the computer network a method of determining when to establish telephone communication between two parties, each of whom is a user connected to said computer network, wherein said method comprises:

- at the computer network, monitoring activity of the user computers associated with both the first and second parties;

- at the computer network, receiving information from the telephone network that the first party is originating a call to the second party;

- at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party; and

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at the computer network, using the set of pre-
determined rules to process i) the information
received from the telephone network regarding the
call being originated by the first party, and ii) infor-
mation regarding the monitored activity of the user
computers of the first and second parties, to deter-
mine when the second party is available to take the
call originated by the first party.
18. A computer program product as recited in claim 17,
wherein the method further comprises using the information 10
processed at the computer network to facilitate connecting

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the call originated by the first party through the telephone
network to the second party.
19. A computer program product as recited in claim 17,
wherein the pre-determined rules specify whether the second
party accepts telephone calls from the first party.
20. A computer program product as recited in claim 17,
wherein the pre-determined rules define how the telephone
call is to be processed based on the time of the day of the
telephone call.

* * * * *

Exhibit 4



US006263064B1

(12) **United States Patent**
O’Neal et al.

(10) **Patent No.:** **US 6,263,064 B1**
(45) **Date of Patent:** ***Jul. 17, 2001**

- (54) **CENTRALIZED COMMUNICATION CONTROL CENTER FOR VISUALLY AND AUDIBLY UPDATING COMMUNICATION OPTIONS ASSOCIATED WITH COMMUNICATION SERVICES OF A UNIFIED MESSAGING SYSTEM AND METHODS THEREFOR**
- (75) Inventors: **Stephen C. O’Neal**, San Francisco;
John Jiang, Danville, both of CA (US)
- (73) Assignee: **International ThinkLink Corporation**,
San Francisco, CA (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
- (21) Appl. No.: **09/239,585**
- (22) Filed: **Jan. 29, 1999**
- (51) **Int. Cl.⁷** **H04M 3/42**
- (52) **U.S. Cl.** **379/201; 379/88.16; 379/212; 370/352**
- (58) **Field of Search** 379/88.12, 88.13, 379/88.14, 88.15, 88.16, 88.17, 88.22, 88.23, 88.24, 88.25, 88.27, 88.28, 90.01, 201, 210, 211, 212, 230; 370/351, 352, 353, 354

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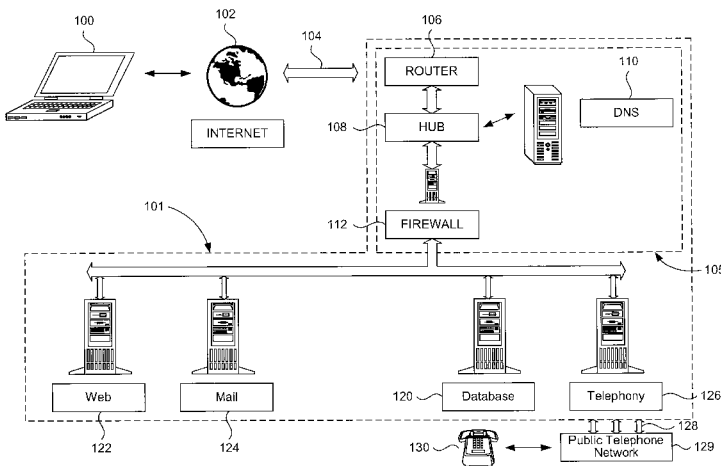
Primary Examiner—Scott L. Weaver
Assistant Examiner—Roland G. Foster

(74) *Attorney, Agent, or Firm*—Beyer Weaver & Thomas, LLP

(57) **ABSTRACT**

A computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the communication services through either a telephony-centric network using a telephone or a data-centric network using a display terminal is disclosed. The computer implemented control center includes a subscriber communication profile database having therein an account pertaining to the subscriber. The account includes the communication options for the subscriber. The communication options include parameters associated with individual ones of the communication services and routings among the communication services. There is also included a computer server coupled to exchange data with the subscriber communication profile database. The computer server is configured to visually display the communication options on the display terminal when the subscriber employs the display terminal to access the computer-implemented control center through the data-centric network. The computer server is also configured to receive from the subscriber via the display terminal a first change to the communication options and to update the first change to the account in the subscriber communication profile database. There is also included a telephony server coupled to exchange data with the communication profile database. The telephony server is configured to audibly represent the communication options to the telephone when the subscriber employs the telephone to access the computer-implemented control center. The telephony server is also configured to receive from the subscriber via the telephone a second change to the communication options and to update the second change to the account in the subscriber communication profile database.

20 Claims, 6 Drawing Sheets



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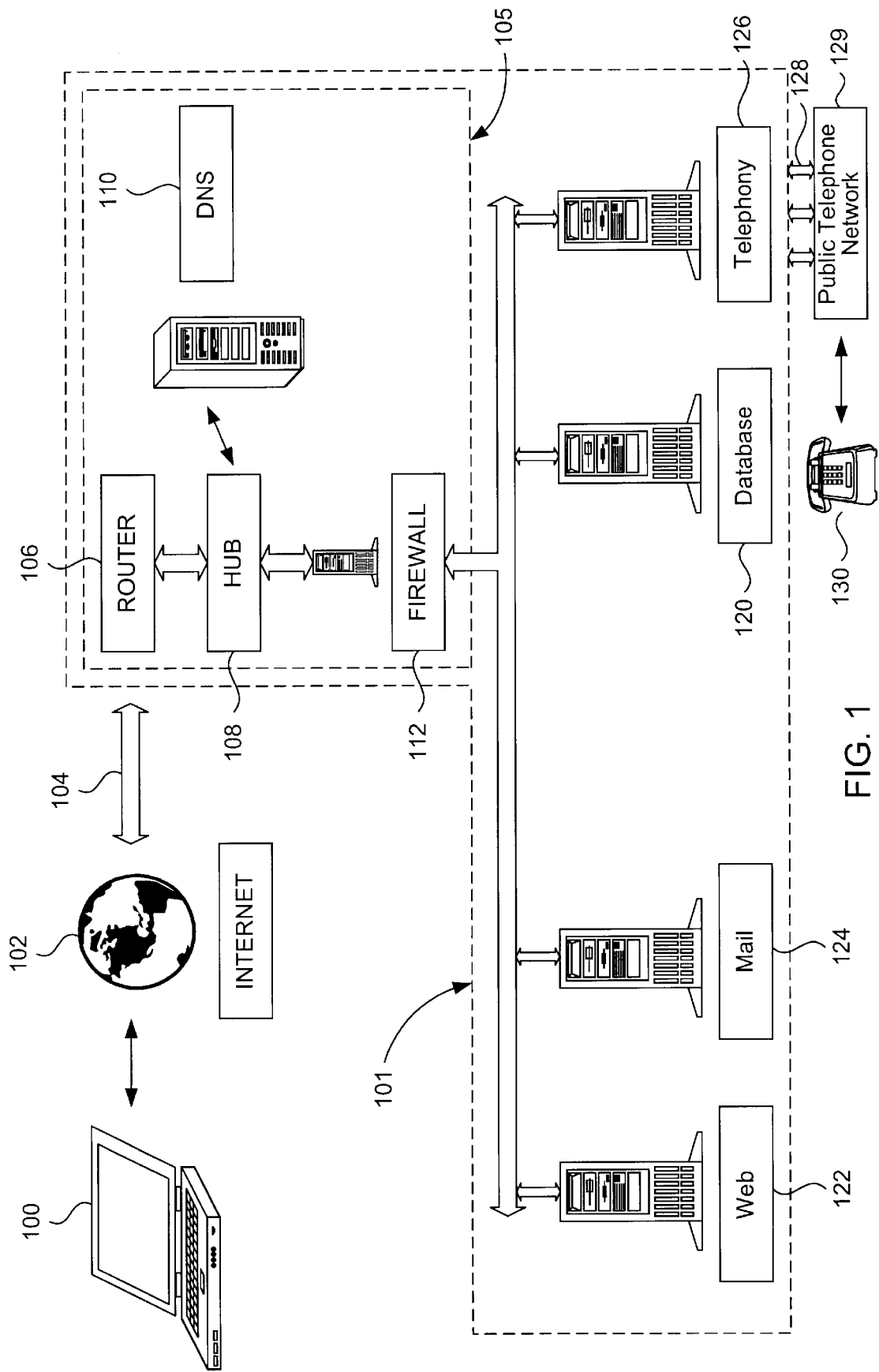


FIG. 1

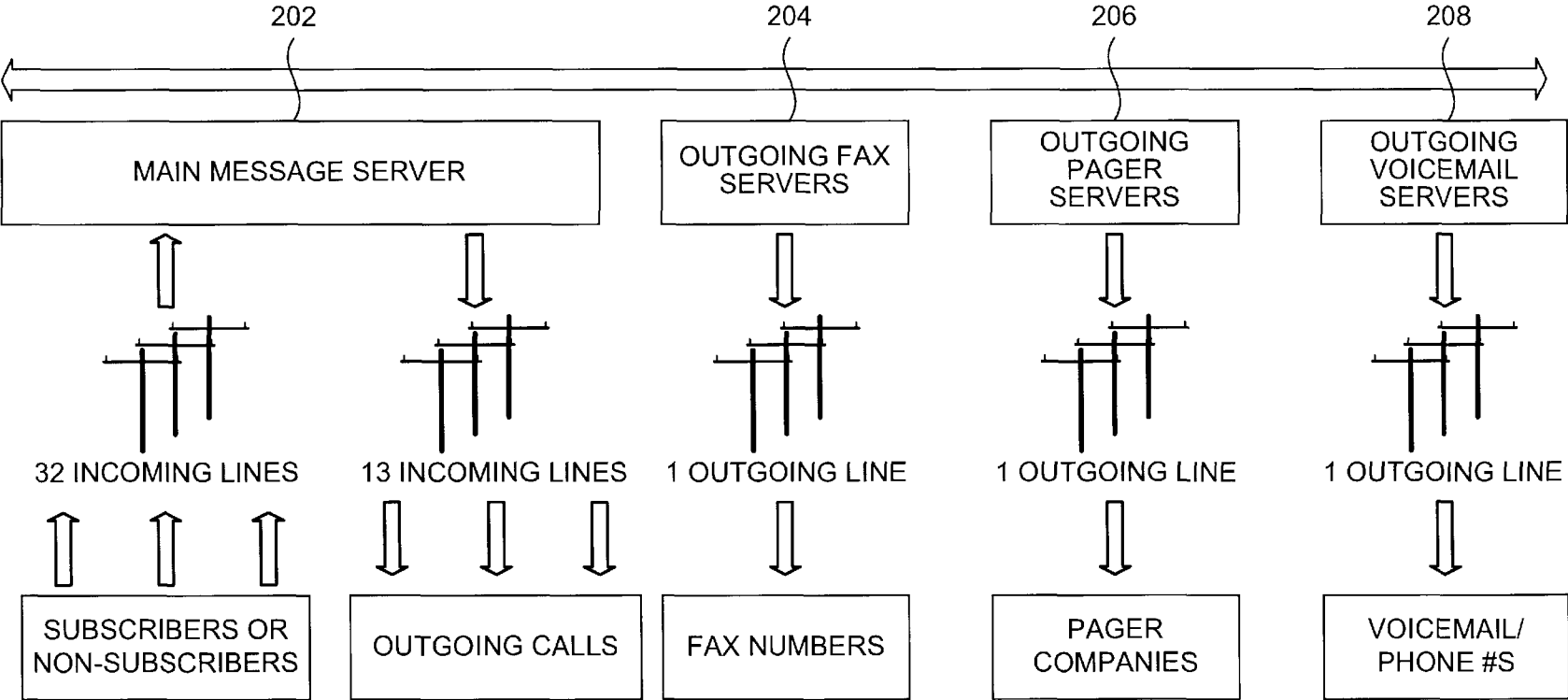


FIG. 2

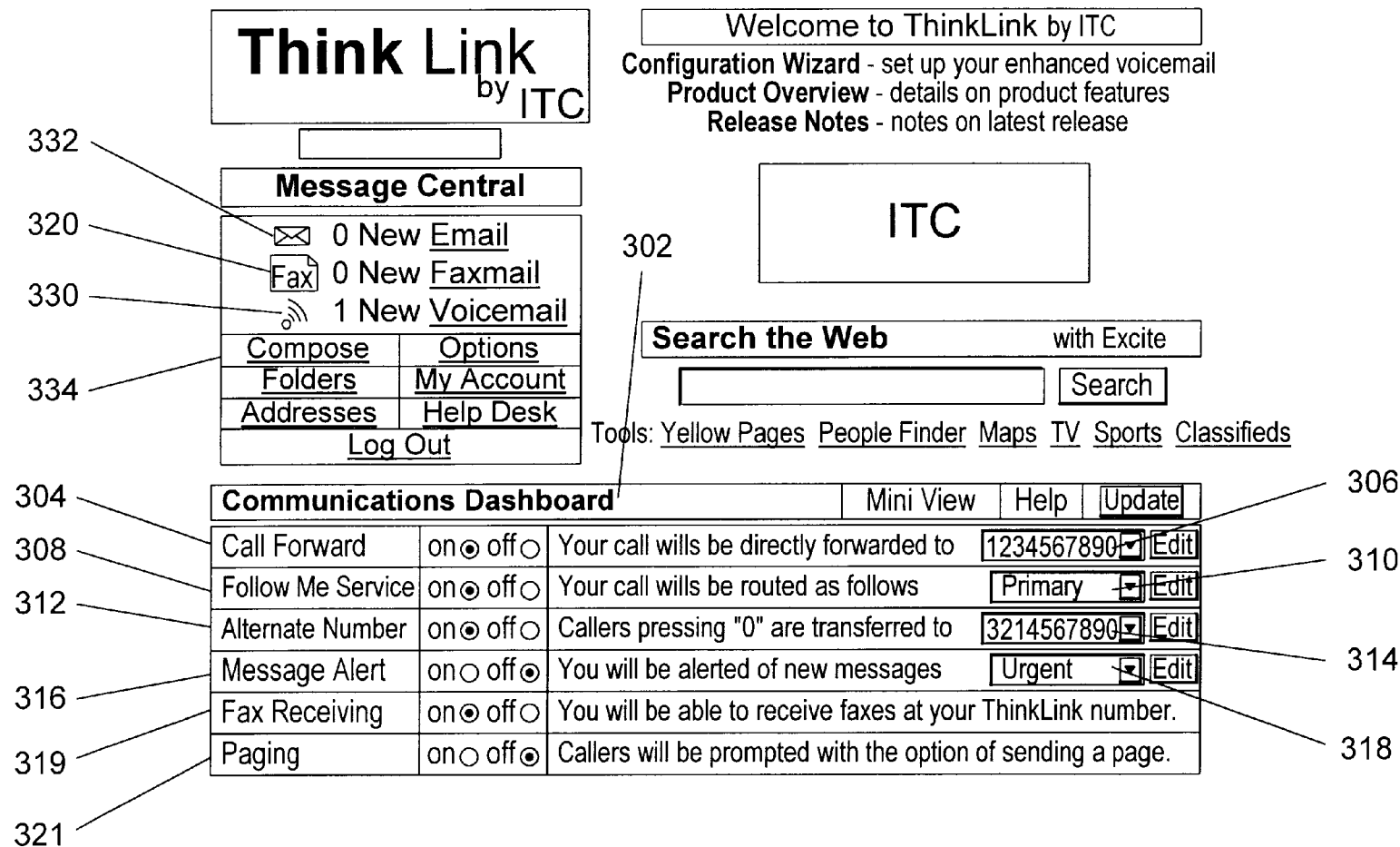


FIG. 3

Think Link

Home

Compose

Folders

Addresses

Options

My Account

Help Desk

Log Out

Options		Help
Advanced Communications Settings		
Call Forward*		on <input checked="" type="radio"/> off <input type="radio"/>
Forward calls to		(123) 456-7890 (H) (Cell) (W) (1) (2)
Follow Me*		on <input checked="" type="radio"/> off <input type="radio"/>
Follow Me call routing		Primary
310	Primary	1. (123) 456-7890
		2. (123) 789-4560
		3. (321) 123-4567
	Override:	
Alternate Number		on <input type="radio"/> off <input checked="" type="radio"/>
"0" forward to		(321) 456-7890 (H) (Cell) (W) (1) (2)
Paging		on <input type="radio"/> off <input checked="" type="radio"/>
Number		Pin
(NOTE: you must enter PIN if required by your pager service)		
[Personal Numbers]		

319

406

408

318

316

304

308

306

314

404a

404b

Save and Close

Cancel

Fax Receiving

on ☐ off ☐

☐ Forward faxes to

(Home Fax) (Work Fax)

Fax Sending

Send attempts

1

Interval between attempts (min)

5

Message Alert

on ☐ off ☒

Urgent messages

Includes:

-new voicemail

-new voicemail

-new email

(in the folders selected at right)

☐ Inbox

*NOTE: When both Call Forward and Follow Me are turned on, the caller is forwarded first. If there is no answer at the Forward number, the caller is given the option to use the Follow Me feature.

FIG. 4

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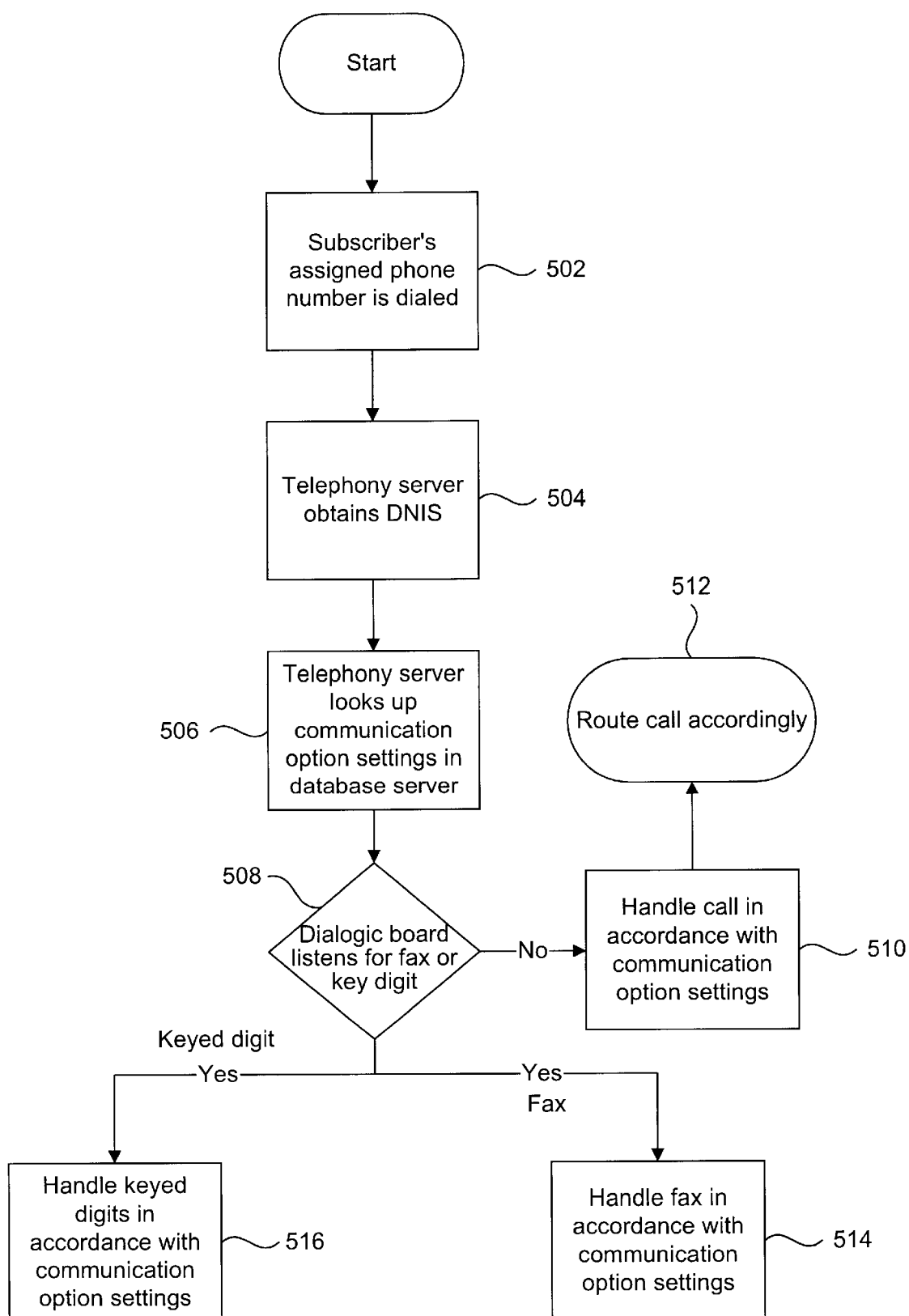


FIG. 5

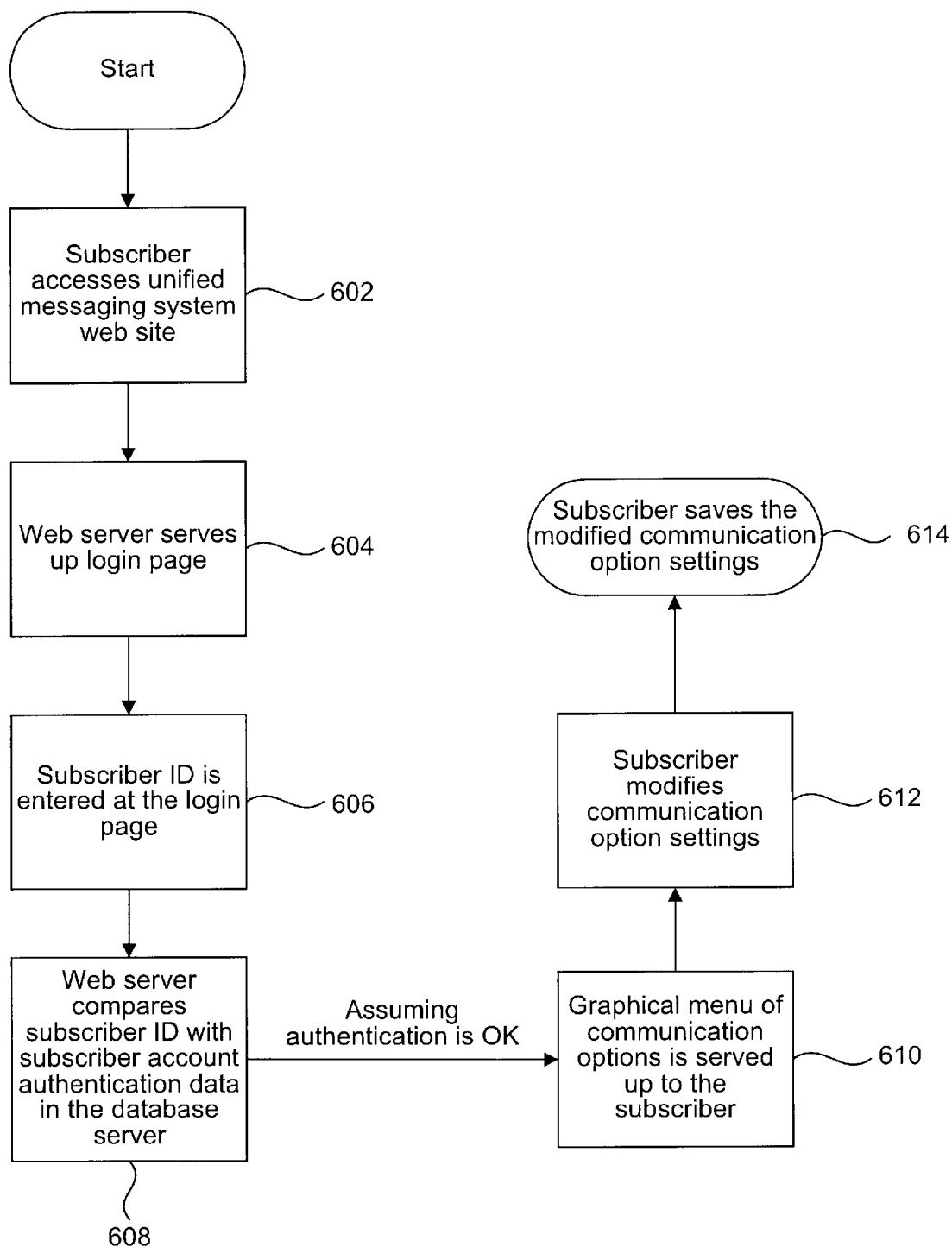


FIG. 6

**CENTRALIZED COMMUNICATION
CONTROL CENTER FOR VISUALLY AND
AUDIBLY UPDATING COMMUNICATION
OPTIONS ASSOCIATED WITH
COMMUNICATION SERVICES OF A
UNIFIED MESSAGING SYSTEM AND
METHODS THEREFOR**

RELATED APPLICATIONS

The following commonly-owned, co-pending patent applications are related and are incorporated herein by reference.

Ser. No. 09/239,560, filed Jan. 29, 1999, entitled "INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM DISTRIBUTED OVER A LARGE GEOGRAPHICAL AREA";

Ser. No. 09/240,367, filed Jan. 29, 1999, entitled "A SYSTEM AND METHOD FOR PROVIDING UNIFIED MESSAGING TO A USER WITH A THIN WEB BROWSER";

Ser. No. 09/239,584, filed Jan. 29, 1999, entitled "COMPUTER-IMPLEMENTED CALL FORWARDING OPTIONS AND METHODS THEREFOR IN A UNIFIED MESSAGING SYSTEM";

Ser. No. 09/240,893, filed Jan. 29, 1999, entitled "INTERACTIVE BILLING SYSTEM UTILIZING A THIN WEB CLIENT INTERFACE";

Ser. No. 09/240,368, filed Jan. 29, 1999, entitled "A SYSTEM AND METHOD TO MANAGE PHONE SOURCED MESSAGES";

Ser. No. 09/240,434, filed Jan. 29, 1999, entitled "METHOD AND APPARATUS FOR NETWORK INDEPENDENT INITIATION OF TELEPHONY";

Ser. No. 09/240,435, filed Jan. 29, 1999, entitled "APPARATUS AND METHOD FOR DEVICE INDEPENDENT MESSAGING NOTIFICATION";

Ser. No. 09/240,436, filed Jan. 29, 1999, entitled "APPARATUS AND METHOD FOR CHANNEL-TRANSPARENT MULTIMEDIA BROADCAST MESSAGING";

Ser. No. 09/240,589, filed Jan. 29, 1999, entitled "VOICE ACCESS THROUGH A DATA-CENTRIC NETWORK TO AN INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM".

BACKGROUND OF THE INVENTION

The present invention relates to communication services available via a data-centric network (i.e., a network that carries digital data) and a telephony-centric network (i.e., a network that carries telephony information such as voice, fax, pager, and the like). More particularly, the present invention relates to a centralized facility and methods therefor that allow a subscriber of various communication services to review and customize his communication options, in an interactive and simplified manner, via either the data-centric network or the telephony-centric network.

Both the data-centric network (e.g., a distributed computer network) and the telephony-centric network (e.g., public telephone network) have existed for some time. Broadly speaking, the data-centric network (such as the Internet) may be thought of as a global computer network that connects millions of computer terminals all over the world in such a way that digitized information can be exchanged irrespective of the different hardware and soft-

ware platforms that may be utilized to gain access to the data-centric network. People and businesses around the world use the data-centric network to retrieve information, communicate and conduct business globally, and access a vast array of services and resources on-line. In a similar manner, the telephony-centric network (whether wired or wireless) may also be thought of as another global network that connects the millions of telephony devices (such as voice-oriented telephones, pagers, facsimile machines, voice mail boxes, and the like) together in such a way that a user at one of the telephony devices can readily transmit information to other telephony devices irrespective of geographic boundaries.

In the past, these two networks existed as separate domains. This is because the widely accessible data-centric network is a fairly recent phenomenon. For decades, the only network that has been available to the masses is the analog telephony-centric network, starting with the telegraph network of the nineteenth century. However, as more and more of the services traditionally offered through the telephony-centric network are being offered in a digital format by the data-centric network, the distinction between the data-centric network and the telephony-centric network begins to blur. Irrespective of whether these two networks exist as separate networks physically or conceptually going forward, the legacies of their separate existence can be seen in the various different communication services and communication devices that currently exist.

By way of example, there exist many different communication devices and services available today to allow a person to communicate to another person, e.g., telephones, facsimile machines, electronic mail (e-mail), pagers, voice mail, and the like. Generally speaking, a telephone is a communication device employed to transmit and receive speech and other sounds. A facsimile machine is a communication device to transmit and receive graphical data. A pager is a highly portable device that allows its user to receive data, and in some cases transmit limited data to a pager service provider. A voice mail box is essentially a service that allows one person to temporarily store telephone messages for retrieval by another. E-mail services allow e-mail users to transmit and receive data from computer terminals connected to the data-centric network. All these devices and services are well known in the art and will not be elaborated further for the sake of brevity.

Currently, these communication services are viewed, both by the service providers who create and maintain the network infrastructure and the subscribers who employ the devices and networks for communication, as separate services. This is due, partly but not entirely, to past government deregulation efforts and gradual technological evolution that have given rise to different service providers, all competing to provide the communication services to individual consumers. Thus, it is not unusual for a consumer to have an e-mail account with one service provider, a telephone account with another service provider and a pager account with yet another service provider. Even if the different services are contracted through a single service provider, the dual existence of the data-centric network and the telephony-centric network, as well as existing billing and account management infrastructures, often force the service provider to manage each of these services as a separate account.

One of the consequences of having different accounts for different services is the proliferation of telephone numbers, facsimile numbers, and pager numbers that a typical consumer must deal with. Thus, it is not at all unusual for a

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consumer to have a home telephone number, a work telephone number, one or more cellular telephone numbers, a pager number, and a facsimile number, with each of these numbers being assigned to a different communication device. Not only are these various numbers difficult to remember for the consumer, they are confusing to others.

A more serious consequence is the burden on the consumer who needs to manage the communication options associated with the different services (which are now assigned to different physical devices and managed as different accounts) to ensure that incoming and outgoing messages are properly handled. By way of example, a person who travels may wish to forward voice calls made to his home and office telephone numbers to his cellular telephone or hotel telephone. Likewise, he may wish to divert facsimiles sent to his office facsimile machine to a facsimile machine that is more local. While in a meeting, however, he may wish to temporarily divert the voice calls to his voice mail box or forward it to another person for handling. To stay in touch, these communication options may need to be changed many times during the course of the day and/or each time he arrives at a new location.

To accomplish the above, the person in the above example currently needs to first ascertain the current communication option settings associated with the various services that he uses. Unless he is diligent in noting and/or remembering the recent changes in the communication option settings, he may need to call each of the service providers to find out what the current communication option settings are. Assuming that he knows the current communication option settings and such calls need not be made, the user must still access each communication device and/or contact each service provider to reroute the incoming and outgoing messages.

By way of example, some facsimile machines currently allow the user to forward the incoming facsimile to another facsimile machine by entering a particular combination of the forwarding number and predefined codes on the facsimile machine keypad. Likewise, many telephone systems require the user to physically enter the forwarding telephone number and predefined codes on the keypad of the telephone from which forwarding originates. However, this requires the user to be physically present at the facsimile machine or telephone from which forwarding originates. If he owns one of these telephones or facsimile machines and is on the road, such forwarding would not be possible absent help from another person who has such physical access.

The fact that each communication service is treated as a different account also requires the user in the example above to access each account and/or service provider to accomplish the changes. Thus, multiple calls may need to be made to change the communication option settings associated with the different communication services. Even with automated response systems in place to handle such changes, these calls take time and can aggravate even the most patient users, especially if multiple calls need to be made to the multiple service providers each time he moves from one location to another. As can be appreciated by those skilled in the art, such approach is at best time consuming and unwieldy.

More typically, a busy user would just not bother changing the communication options associated with the various communication devices that he owns. He would rather suffer the possibility of missing out on some messages than constantly contacting the different service providers and making changes on individual services. In this case, the communication services that he owns are not employed to their fullest potential.

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In view of the foregoing there are desired improved techniques for allowing a user of communication services to review and customize the communication options associated with these services in a simplified and convenient manner.

SUMMARY OF THE INVENTION

The invention relates, in one embodiment, to a computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the plurality of communication services. The communication options include parameters associated with individual ones of the plurality of the communication services and routings among the plurality of communication services. The plurality of communication services comprising a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network. The communication options is accessible via display terminals coupled to the data-centric network and via telephones coupled to the telephony-centric network. The computer-implemented control center includes a subscriber communication profile database. The subscriber communication profile database has therein an account pertaining to the subscriber. The account includes the communication options for the subscriber.

There is also included a computer server coupled to exchange data with the subscriber communication profile database. The computer server is configured to visually display the communication options on one of the display terminals when the subscriber employs the one of the display terminals to access the computer-implemented control center. The computer server also is configured to receive from the subscriber via the one of the display terminals a first change to the communication options and to update the first change to the account in the subscriber communication profile database.

There is further included a telephony server coupled to exchange data with the communication profile database. The telephony server is configured to audibly represent the communication options to one of the telephones when the subscriber employs the one of the telephones to access the computer-implemented control center. The telephony server also is configured to receive from the subscriber via the one of the telephones a second change to the communication options and to update the second change to the account in the subscriber communication profile database.

The invention relates, in another embodiment, to a computer-implemented method for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the plurality of communication services. The communication options include parameters associated with individual ones of the plurality of the communication services and routings among the plurality of communication services. The plurality of communication services includes a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network. The communication options are accessible via display terminals coupled to the data-centric network and via telephones coupled to the telephony-centric network. The method includes providing a subscriber communication profile database. The subscriber communication profile database has therein an account pertaining to the subscriber. The account includes the communication options for the subscriber.

There is also included visually displaying the communication options on one of the display terminals, using a

computer server coupled to exchange data with the subscriber communication profile database, when the subscriber employs the one of the display terminals to access the computer-implemented control center. There is further included receiving from the subscriber via the one of the display terminals at the computer server a first change to the communication options. The first change to the communication options pertains to either the voice telephone service or the e-mail service. Additionally, there is included updating the first change to the account in the subscriber communication profile database, thereby resulting in a first updated subscriber communication profile database, wherein subsequent messages to the subscriber at the unified messaging system, including the voice telephone service, are handled in accordance with the first updated subscriber communication profile database.

These and other features of the present invention will be described in more detail below in the detailed description of the invention and in conjunction with the following figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

FIG. 1 depicts, in one embodiment, the general overview of the unified message system.

FIG. 2 illustrates, in one embodiment, how the 48 telephone lines provided per T1 link may be divided among the sub-servers of the telephony server.

FIG. 3, in one embodiment, the user interface portion of the computer-implemented control center, representing the visual display panel for displaying the communication options pertaining to a particular subscriber on a computer display screen.

FIG. 4 shows the communication options in greater detail, in accordance with one embodiment of the present invention.

FIG. 5 is a flow diagram depicting, in one embodiment, the relevant steps of a computer-implemented process for handling access to the unified messaging system through the telephony-centric network by a subscribing or a non-subscribing caller.

FIG. 6 is a flow diagram depicting, in one embodiment, the relevant steps of a computer implemented process for handling access to the unified messaging system through a computer network by a subscriber.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention will now be described in detail with reference to a few referred embodiments thereof and as illustrated in the accompanying drawings. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be obvious, however, to one skilled in the art, that the present invention may be practiced without some or all of these specific details. In other instances, well known process steps have not been described in detail in order not to unnecessarily obscure the present invention.

In accordance with one aspect of the present invention, there is provided a computer-implemented control center which is coupled to the data-centric network and the telephony-centric network, and which allows a user to access, using either a telephone or a computer, the commu-

nication options associated with the various communication services of a unified messaging service. Unlike the prior art approach which requires the user to contact individual service providers/accounts and/or to access individual communication devices to review and change the communication options associated therewith, the computer-implemented control center allows the communication options associated with the various communication services to be accessed substantially all at once. That is, the computer-implemented control center provides a single central facility through which the communication option settings associated with the different communication services may be reviewed and/or modified.

In accordance with one aspect of the present invention, the communication options, which include the options associated with individual communication services as well as routings among the different individual communication services, are accessible using either a computer network interface (e.g., a web page) or a telephone network interface (e.g., via a telephone). The communication option settings themselves do not reside with individual communication devices or require access through a particular communication device (such as with the assigned facsimile machines or telephones discussed earlier). Rather, the communication option settings are centralized within the universally accessible computer-implemented control center and can be utilized to properly control the communication options associated with the various services and to facilitate control of the routings therebetween. More importantly, they can be reviewed and modified by a properly authenticated subscriber of the unified messaging service through any suitable computer or telephone irrespective of the geographic location from which the accessing and/or modifications are made.

In the aforementioned co-pending patent applications entitled "INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM DISTRIBUTED OVER A LARGE GEOGRAPHICAL AREA" (Ser. No. 09/239,560 filed Jan. 29, 1999), and "A SYSTEM AND METHOD FOR PROVIDING UNIFIED MESSAGING TO A USER WITH A THIN WEB BROWSER" (Ser No. 09/240,367, filed Jan. 29, 1999), which are all incorporated herein by reference, some inventive unified messaging services and their various features are disclosed. Although the present invention may be implemented on any unified messaging system, reference may be made to the above-mentioned co-pending patent applications for details pertaining to preferable unified messaging systems on which the present invention may be implemented.

In general terms, a unified messaging system benefits a user by integrating various communication services, which up to now have existed as separate services. The integration facilitates simplified management, billing, and more importantly the routing of messages among the various services. With a unified messaging service, a user may, for example, specify that an incoming facsimile be forwarded to a computer for viewing or to a printer for printing, listen to e-mail messages through a telephone, receive pager notification when a facsimile is received, or the like. Within limits, a unified messaging system allows messages to be received, stored, retrieved, and/or forwarded (in the original format or in a different/abbreviated format) without regard to the communication devices and/or networks (i.e., data-centric vs. telephony-centric) employed for the transmission of the messages.

A unified messaging system implemented on a data-centric network takes the unified messaging system concept

a step further by internally storing and manipulating the messages in a digital format irrespective of whether the message was received and/or will be sent in the digital or analog format. As is well known, digital formatting increases the flexibility with which information contained in the messages can be analyzed, stored, manipulated, and/or routed among the various communication devices. More importantly, the implementation of the unified messaging system on a data-centric network permits the subscriber to access his account through any computer or telephone irrespective of the geographic location from which the accessing and/or modifications are made.

To facilitate discussion, FIG. 1 depicts, in accordance with one embodiment of the present invention, the general overview of a unified message system 101. With reference to FIG. 1, there is shown a user computer 100, representing a computer that may be employed to access and/or modify the communication options associated with the communication services offered by the unified messaging system. Although user computer 100 is shown to be a desktop personal computer (such as an Intel-based personal computer), user computer 100 may in fact represent any computing device capable of accessing the data-centric network (represented by reference 102 in FIG. 1). By way of example, user computer 100 may represent a laptop computer, which may access the data-centric network either through wired connections or in a wireless manner. As another example, user computer 100 may represent a personal digital assistant (PDA) or a palm-top computer, or a thin-client type computer.

Data-centric network 102 may represent any computer network which couples together users from geographically dispersed locations. In a preferred embodiment, data-centric network 102 represents the Internet, although data-centric network 102 may also represent a Wide Area Network (WAN), a Local Area Network (LAN), a Virtual Private Network (PN) or any similarly suitable networking arrangement that allows users to log in from a remote terminal.

With reference to FIG. 1, there is shown data link 104, representing the high speed data lines for transmitting and receiving data between unified messaging system 101 and data-centric network 102. In a preferred embodiment, data link 104 is implemented by high speed T1 data lines, although other types of data lines such as fiber optics may also be employed. A network interface system 105 couples data link 104 to the remainder of unified messaging system 101, which is shown to include four servers as shown (the servers are discussed later herein).

Network interface system 105 represents the interface system that ensures data is properly transmitted and received between unified messaging system 101 and data-centric network 102. Of course network interface system 105 may vary depending on the implementations of the data-centric network and/or the portion of unified messaging system 101 to which network interface system 105 is coupled.

In the case of the Internet, one current preferred implementation of network interface system 105 may include a router 106, a hub 108, a DNS (Domain Name System) facility 110, and a firewall 112. Typically, the router 106 is a piece of hardware or software that examines the IP address of data packets and determines the routing of the data packets based on the IP address.

Router 106 acts cooperatively with hub 108 and DNS facility 110 to permit properly addressed data packets to be received through firewall 112. Router 106, hub 108, DNS facility 110, and firewall 112 are conventional and will not be belabored here for the sake of brevity.

At the heart of the unified message system are a set of servers which are coupled to exchange data and are connected to firewall 112 and the public telephone network. Typically, a server represents a computer that processes data for use by other data-consumer devices (such as other servers, computers or any of the communication devices through a proper interface circuit). There is shown a database server 120, which is employed to, among other tasks, organize and maintain the subscriber communication profile database. The subscriber communication profile database itself may reside with database server 120 and represents a data store of subscriber accounts and communication option settings associated therewith. Incoming messages to a particular subscriber or outgoing messages from that subscriber are formatted and routed in accordance with the communication option settings stored in the subscriber communication profile database. Properly authorized changes to the communication option settings will be reflected in the communication option settings stored in the subscriber communication profile database and employed to handle subsequent messages (whether incoming or outgoing).

Subscriber authentication data may be employed to access to a subscriber communication profile database. Subscriber authentication data may be stored in the database server. Subscriber authentication may be accomplished using several techniques. For example, a numeric password, an alphanumeric password, a hidden code wherein the password is randomly hidden in a string (i.e., xxxppppxx, xppppxxxx, etc.) and biometrics (e.g., retina scans, hand prints, palm prints, finger prints, voice recognition, etc.).

A web server 122 is employed to facilitate interaction between unified messaging system 101 and data-centric network 102. Web server 122 represents one of the system-side servers (i.e., a server that handles the exchange of data with the user's computer via the data-centric network) and is employed, for example, to present to user computer 100 the log-in screen when a subscriber employs user computer 100 to access the unified messaging service. Once that subscriber is properly authenticated (e.g., through a password procedure or another suitable authentication procedure), web server 122 then communicates with database server 120 to obtain the current communication option settings for that subscriber and to display the current communication option settings and an individualized web page to the subscriber for review.

In one preferred embodiment, web server 122 is employed to store all messages pertaining to a particular subscriber. The messages are stored as files in web server 122. These messages may represent, for example, voice files, facsimiles, e-mail messages, voice mail messages, or the like. Pointers in database server 120 facilitate access to the stored messages in web server 122. However, it is contemplated that the messages may be stored in any of the servers discussed herein and/or in a separate storage device accessible by the servers.

An e-mail server 124 is employed to process incoming and outgoing e-mail messages. By way of example, e-mail server 124 may be employed to format/translate the e-mail messages so that they can be properly transmitted to other e-mail systems and understood thereat. For incoming messages, e-mail server 124 may be employed to format/translate the information transmitted via the incoming e-mail and to prepare them for use by other data consumers.

A telephony server 126 is shown coupled between telephone link 128 and the remainder of the unified messaging system and may include any number of subservers, such as

are shown in FIG. 2. In a manner analogous to web server 122, telephony server 126 represents a system-side server (i.e., a telephony server that handles the exchange of information with the user via the telephony-centric network) and is employed to facilitate interaction between unified messaging system 101 and telephony-centric network 129. Telephony server 126 may be employed to, for example, translate the telephone signals (such as the dialed digits) into a digital format for the purpose of authenticating and allowing subscriber access. Telephony server 126 may also be employed to translate such dialed digits and/or other telephone signals (such as a facsimile tones or verbal commands) into digital data, which may then be employed to facilitate handling of messages and/or the communication option settings. In one embodiment, Dialogic board models D 240 SC-T1, D 480 SC-1, CP-4/SC, CP-6/SC, and/or CP-12/SC (available from Dialogic Corporation of Parsippany, N.J.) are employed to facilitate the translation between telephone signals and digital data. Once translation is performed, software within telephony server 126 employs the digital data to decide how to handle the message using the communication option settings obtained from the subscriber communication profile database. If the subscriber, through predefined dialing sequences, indicates that he wishes to review and/or modify the communication option settings, software within telephony server 126 operates cooperatively with database server 120 to affect the change to the communication option settings. Once the communication option settings are reflected in the subscriber communication profile database stored in database server 120, the new communication option settings are consulted each time a message needs to be handled by the unified messaging system.

Telephony-centric network 129 represents any telephone network which couples together telephony-type communication devices (e.g., facsimile machines, pagers, telephones) from geographically dispersed locations. By way of example, telephony-centric network 129 may represent a plain old telephone system (POTS), a wired telephone network popularly known as Public Service Telephone Network (PSTN) or a cellular network or a combination thereof. Telephony-centric network 129 is well known and will not be discussed in great detail here for the sake of brevity.

A telephone 130 is shown coupled to telephony-centric network 129. In reality, it should be understood that a wide variety of telephony devices (which are not shown to simplify the illustration) are connected to telephony-centric network 129. Some of these exemplary communication devices are, as mentioned, facsimile machines, pagers, cellular telephone sets, wired telephone sets, and the like.

Telephone link 128 represents the telephone communication channels for transmitting and receiving telephone signals between unified messaging system 101 and telephony-centric network 129. In a preferred embodiment, telephone link 128 represents high bandwidth T1 telephone links, although other types of telephone links may also be employed. Note that there is no requirement that the data transmitted on telephone link 128 be analog. In fact, with the upcoming convergence of data networks and telephone networks, the telephony information that traverses telephone link 128 may well be digital (in which case, telephony server 116 will be adapted to handle digital telephony signals instead of analog telephony signals). As a noteworthy point, it is expected that as data networks and telephone networks converge, the relevant functionality represented by the servers herein may still apply, albeit with the proper modification to handle an all-digital combined data/telephone network.

FIG. 2 illustrates, in accordance with one embodiment of the present invention, how the 48 telephone lines provided per T1 link may be divided among the subervers of telephony server 126. As shown in FIG. 2, 45 of the telephone lines may be employed by a main message server 202 to handle the incoming/outgoing voice calls, the incoming voice mail messages, and the incoming facsimiles. Of the 45 telephone lines, 32 may be provisioned for the subscribing or non-subscribing users to dial into the unified messaging system, and the other 13 telephone lines may be employed to allow outgoing calls to be made from within the unified messaging system. The outgoing calls may, for example, be calls destined for the unified messaging system but are rerouted out of the unified messaging system in accordance with a subscriber's communication option setting or they may be originated by the subscriber, who dials into the unified messaging system (using a toll-free access number, for example) and requests an outgoing call be made therefrom to some destination number (for example by punching in the "#" key after authentication, followed by the destination number), thus employing the unified messaging system as a type of calling card service.

One of the 48 telephone lines of the T1 link may be reserved for outgoing facsimile transmission, which is handled by an outgoing facsimile server 204. Another telephone line may be apportioned for the outgoing paging service, which is handled by an outgoing pager server 206. Outgoing voice-mail messages are handled by voice mail server 208, which is coupled to another one of the 48 telephone lines of the T1 link as shown.

To elaborate, outgoing voicemails are voice messages sent to a voicemail phone number which may be created via the web or the telephone. Outgoing voicemails may be new voicemails, replies to other messages or forwarded as a voicemail. For example, when forwarding a voicemail via the web, the voicemail may be treated as an attachment to a speech synthesized text message with the recipient address as a telephone number. Outgoing voicemail servers may be geographically distributed and communicate with each other via internet in such a way that the server nearest the destination voicemail phone number may be assigned to send the voicemail via either a circuit-switched call or packet-switched call.

Outgoing facsimiles are facsimile messages sent to a facsimile telephone number which may be created via the web or the telephone. Outgoing facsimiles may be new facsimiles, replies to other messages, forwarded as a facsimile or call-forwarded as a facsimile in which the system stores the incoming facsimile and then forwards the facsimile to the subscriber's facsimile-forward number. For example, when forwarding a facsimile via the web, the facsimile may be treated as an attachment to Tiff conversion of a text message with the recipient address as a phone number. Like outgoing voicemail servers, outgoing facsimile servers may also be geographically distributed. Outgoing facsimile servers may communicate with each other via internet in such a way that the server nearest to the destination facsimile telephone number may be assigned to send the facsimile via either a circuit-switched call or packet-switched call.

Outgoing pages are paging messages sent to a pager number which may be created via the telephone either by the caller or by the system when sending notification. Like outgoing voicemail servers, outgoing page servers may also be geographically distributed. Outgoing page servers may communicate with each other via the internet in such a way that the server nearest to the destination pager telephone

number may be assigned to send the page via either a circuit-switched call or packet-switched call.

There may also be outgoing emails and their servers that do not involve circuit switched calls. Some pagers may be alphanumerical type and can receive messages as an email. In this case, the outgoing pager server may delegate these requests to the outgoing email servers.

In one embodiment, messages sent to the unified messaging system may be stored in web server 122 with pointers to these messages being held in database server 120. The above mentioned set of sub-servers (outgoing facsimile server, outgoing pager server and outgoing voice mail server) are arranged to make requests to the database server for outgoing messages stored on the web server. If an outgoing message is detected by a sub-server, software within the sub-servers decides how to handle the outgoing message according to the communication option settings obtained from the subscriber communication profile database. Again, a Dialogic board may be employed, in one embodiment, to facilitate the translation between the stored data and the outgoing telephone signal.

All types of outgoing message requests (voicemail, facsimile, email, pages) are queued in the database server. These requests can also be associated with a delivery time (e.g., the default time is "now"). Each type of request may be stored in a separate queue. An outgoing server of a particular type of message periodically checks its queue from the database server to see if any request's time is up for delivery.

It should be noted that FIG. 2 shows only one exemplary way to divide the TI telephone lines among the various sub-servers of telephony server 126. Depending on the traffic pattern generated by subscribing and non-subscribing users of the unified messaging system, these lines and sub-servers may be scaled as necessary.

FIG. 3 illustrates, in accordance with one embodiment of the present invention, the user-interface for an exemplary computer-implemented control center, representing the visual display panel for displaying the communication options pertaining to a particular subscriber on a computer display screen. Through computer-implemented control center 302, the user may quickly and conveniently review the communication option settings associated with the various services and make changes thereto. That is, the computer-implemented control center 302 serves as the centralized control panel for reviewing and/or customizing the communication options associated with the various communication services. FIG. 4 illustrates aspects of computer-implemented control center 302 in greater detail.

In the exemplary implementation of FIG. 3, six representative communication options are shown. The call forwarding service 304, if it is enabled, allows incoming calls through telephony-centric network 129 to be routed to a provided forwarding number 306. The call forwarding option setting may also be seen in the detailed computer-implemented control center view of FIG. 4, which shows the communication options in greater detail.

To accomplish the forwarding, telephony server 126 consults, after a call is made to a subscriber's telephone number, the subscriber communication profile database in database server 120. If the call forwarding option is enabled, that call is then forwarded to the forwarding number specified by telephony server 126 via an outgoing telephone line. If the forwarding number does not pick up, the call may be rerouted, for example, to the subscriber's voice mail box. If the call forwarding option is not enabled and the caller does

not choose other methods discussed below to try to contact the subscriber, the call may then be forwarded to the subscriber's voice mail box as well.

The "follow me" service 308 gives the subscriber the ability to designate a set of telephone numbers where he may likely be found and gives the caller the option to try to find the subscriber (or someone who may appropriately handle the incoming call) at those numbers. By way of example, during a work day, a given subscriber may be contacted either at his main office telephone, his secondary office telephone, or his cellular telephone in his car. On the weekend, that same subscriber may be found at home or at a cellular telephone in his boat. The office/car set of telephone numbers may be designated a primary set 310 and the home/boat set of telephone numbers may be designated a second set. FIG. 4 shows the communication options associated with the follow me service in greater detail.

On a week day, the subscriber may enable the follow me service option and select primary set 310 as the set of telephone numbers where he may likely be found. On the weekend, the subscriber may enable the follow me service option and select the secondary set, for example. From the caller's perspective, the follow me service is preferably an on-demand service. That is, the caller is preferably given the option to decide whether to employ the follow me service by pressing a predefined key in response to instructions or to simply allow the call to be passed to voice mail if unanswered.

If the follow me service is enabled by the subscriber and chosen by the caller, telephony server 126 will try to place outgoing calls to the numbers designated in the selected set starting with the first number in the set. To ensure that the call is not inadvertently completed vis-a-vis by a bystander who happens to be near the destination telephone and picks up the telephone when it rings, telephony server 126 may allow the caller to record his name. Telephony server 126 then announces the name to the person picking up the destination telephone prior to giving that person a choice of whether to accept the call. If the person who picks up the call is indeed the person for whom the call is intended, the entry of a predefined key press (on instructions by telephony server 126) on the destination telephone keypad will allow telephony server 126 to complete the end-to-end connection. In this manner, the follow me service may be employed as a call screening mechanism if desired. Telephony server 126 may try all the numbers in the set in sequence until the subscriber is found. If not, the call may be allowed to pass into the subscriber's voice mail box.

In one embodiment, the follow-me service may not always use the same sequence to callout a subscriber when the subscriber has set up several numbers as his possible locations (e.g., weekday routine or weekend and evening routine). The follow-me service may use the number where the subscriber is last located (stored in memory) as the first number to dial in the sequence provided the time for the last location happened within a certain interval (e.g., an hour).

An alternate number service 312 gives the subscriber the ability to designate a telephone number as an alternate number where the caller can attempt to locate the subscriber (or someone who may appropriately handle the incoming call) at a number designated in advance (314). FIG. 4 shows the communication options associated with the alternate number service in greater detail. The alternate number option is similar to call forwarding with the exception that the alternate number option is an on-demand service. That is, the caller is preferably given the option to decide whether to

employ the alternate number service by pressing a pre-defined key in response to instructions or to simply allow the call to be passed to voice-mail if unanswered. In all other respects, the alternate number service may function in the same way as the call forwarding service. An alternate number may also be used to set a personal operator number (e.g., your secretary).

A message alert option **316** gives the subscriber the ability to select whether to be alerted when a message is received. The message that triggers the alert may be specified using any number of filtering criteria stored as part of the subscriber communication option settings. In the example of FIG. **3**, the filtering criteria is "urgent" (**318**) although any type of filtering may be applied. For example, the filtering criteria could be the message's sender, subject or content. The sender could be identified by his email address or phone number (e.g., caller ID).

FIG. **4** shows, in one embodiment, the communication option settings associated with the unified messaging service in greater detail. With respect to the message alert service, the alerting itself may be accomplished using any of the communication devices controlled by the unified messaging system (e.g., pager, telephone at a designated number, voice mail in a designated voice mail box, facsimile at a designated facsimile number, e-mail at a designated e-mail address, and the like). In accordance with one particularly advantageous embodiment, the message alert is sent to a pager via outgoing pager sub-server **206** since it is the device most likely to be near the subscriber. In one embodiment, the server that sends the alert (e.g., the web server if the incoming message is an e-mail, the telephony server if the incoming message is a facsimile or telephone call) may send out a predefined alphanumeric code that identifies the type of incoming message. The alphanumeric code itself may be predefined either by the unified messaging system or by the subscriber if customization is desired. Preferably, the alert is sent to the subscriber's own number to alert the subscriber that an incoming message fitting the filtering criteria has been received at the unified messaging system.

A facsimile receiving service **319** allows the user to receive facsimile at the unified messaging system if someone sends a facsimile to the subscriber's telephone number. FIG. **4** shows the communication options associated with the facsimile receiving service in greater detail. If the facsimile receiving option is enabled, telephony server **126** will monitor for the facsimile tone and process the incoming message as a facsimile if the facsimile tone is detected. In one embodiment, the incoming facsimile is stored as a GIF or TIFF file that may be viewed by the subscriber through a web page by clicking on facsimile mail link **320**. If the facsimile forward option **406** is also enabled, the facsimile will also be forwarded by the outgoing facsimile server **204** to another facsimile machine at specified facsimile number **408**, additionally or alternatively to storing a copy of the received facsimile at the unified messaging service. If the facsimile option is not enabled but the call forwarding option is enabled, the call is forwarded on and may be picked up by the forwarded device (if it is a functioning facsimile machine). If not, the incoming facsimile will not be received.

A paging service **321** allows a message sent to the subscriber to be rerouted to a pager designated by the subscriber. Paging service **321** is preferably an on-demand service and allows the caller, if desired, to send a short message to a pager designated by the subscriber. The pager number designated by the subscriber may be designated at location **404a** (the paging service number) and, if required,

using location **404b** (the PIN number for the pager). If the paging service is enabled, a caller to the subscriber's telephone number will be given an option to send a short message to the pager subscriber pager (for example, by pressing a predefined key to send the short message). As noted before, the caller may also choose any of the other services follow me service **308** and/or alternate number **312** if enabled. In this manner, a single telephone number may serve as the access point to receive a page, a voice message, a facsimile, etc.

For alphanumeric pagers with an email address, the outgoing page server may use text to describe the alert message (e.g., "you have a urgent voicemail from caller ID 4152222222 with return number 4153333333") instead of codes as in the case of numeric pagers. The outgoing pager server can then delegate the alert messages to the outgoing email server.

Voice mail messages that are stored may be listened to using either the computer (through an appropriate software/sound card) by clicking on voice mail link **330** (FIG. **3**) or a telephone coupled to the telephony-centric network. E-mails that are sent to the subscriber using the subscriber's e-mail address may be read on-line by, for example, clicking on e-mail link **332** (FIG. **3**). In one embodiment, telephone server **126** may be equipped with a text-to-speech facility to allow the subscriber to listen to the content of the e-mail message through a telephone. FIG. **3** also shows an outgoing e-mail link **334**, which links the subscriber to an e-mail application program to allow the subscriber to compose and send out e-mail messages. In the case of replying an email via phone, a voice recording may be taken and sent as an email attachment.

As can be appreciated from the above examples, computer-implemented control center **302** provides a central visual interface that allows a subscriber to efficiently review and/or modify the communication option settings associated with the various communication services offered. This is in sharp contrast with time-consuming and burdensome prior art approaches whereby the person is required to contact different entities and deal with different accounts to change the communication options associated with different communication services.

In one embodiment, the computer-implemented control center has two views: the minimized view and the full view. In the minimized view (e.g., FIG. **3** in one embodiment), the computer-implemented control center may simply show the simplified routing details and the on-off settings associated with the communication options. Although the user may make changes to the on-off settings, fuller edit capabilities are preferably provided in the full view. In the full view (e.g., FIG. **4** in one embodiment), the computer-implemented control center additionally add explanations and detailed routing choices. If desired, an authentication procedure may be implemented with either the minimized view or the full view to ensure that the person making editing changes to the communication options is properly authorized.

It should be appreciated that the communication services and options discussed in connection with FIGS. **3** and **4** are only illustrative of the capabilities of the inventive computer-implemented control center. It should be apparent to those skilled in the art that the same control panel may be presented to the subscriber through the telephony server and the telephone interface if the subscriber wishes to review and/or change the communication options using a telephone connected to the telephony-centric network. The communi-

cation options may be presented in a sound format and the subscriber may be offered an option menu to review and/or change any communication option setting. Further, it should also be apparent to those skilled in the art that communication services options other than the preferred and discussed communication services and options can readily be controlled by the inventive computer-implemented control center. Irrespective of the services and options involved, a subscriber can access the centralized computer-implemented control center through either a computer connected to the data-centric network or a telephone connected to the telephony-centric network to review and/or change the communication options.

FIG. 5 is a flow diagram depicting, in one embodiment, the relevant steps of a computer-implemented process for handling access to the unified messaging system through the telephony-centric network by a subscribing or a non-subscribing caller. The subscriber may wish to access the unified messaging system to, for example, listen to stored voice mail messages or e-mail messages, to use the unified messaging system as a calling card service, or to review and/or modify the communication options. A non-subscribing caller may access the unified messaging system to, for example, send a facsimile, a page, or to call the subscriber. The first step 502 involves accessing the unified message system through a telephone using the subscriber's assigned telephone number. A set of two numbers may be assigned to a user, a local telephone number and a toll-free telephone number, both of which may be associated with a single user account.

The dialed digits reaches telephony server 126 via telephone link 128. Telephony server 126 then obtains the DNIS (direct number information service) by digitizing the dialed digits (step 504) and employs the dialed digits to obtain the communication option settings associated with the account represented by the dialed telephone number (step 506). As mentioned earlier, these communication option settings reside in the subscriber communication profile database, which may be managed by database server 120, in one embodiment. During this time, telephone server 126, through an appropriate interface board such as the aforementioned Dialogic board, monitors the incoming line for a facsimile tone or telephone key digit tone.

If no such facsimile tone or telephone key digit tone is detected (step 508), the call is assumed to be a normal call to the subscriber and will be handled (in steps 510 and 512) in accordance with the communication option settings in the manner discussed earlier (e.g., forwarded if call forwarding is on, routed to an alternate number if the caller selects that option and alternate service is enabled, and the like).

On the other hand, if a facsimile tone is detected by telephony server 126, the call will be handled as an incoming facsimile in accordance with the communication option settings (step 514). By way of example, if the facsimile receiving service is enabled, a copy of the facsimile will be stored for later retrieval by the subscriber. If the facsimile forwarding option is enabled, a copy of the facsimile is alternatively or additionally sent to the forwarded facsimile number.

On the other hand, if a keyed digit tone is detected by telephony server 126, software within telephony server will handle the options chosen by the caller (step 516). By way of example, one option may represent the subscriber wishing to access the computer-implemented control center (via an appropriate key press) to review and/or change the communication options. In this case, telephony server 126 prefer-

ably serves up the account statistics, e.g., how many voice mail messages, facsimiles, e-mail messages, etc. are waiting and asks the caller for authentication as a subscriber. If there are none, the subscriber may wish to quickly hang up and not go through the authentication procedure (and extending the cost of the call). This, however, is an option and may be eliminated if privacy is a concern (that is, authentication may take place before the presentation of account statistics).

Telephony server 126 may then obtain the authentication data from the caller (e.g., the password) and compare it with the subscriber account authentication data, which it obtains from the subscriber communication profile database in the database server. Authentication may be done via keyed digit entry or, in one embodiment, by voice commands, which may then be translated to keyed digits by appropriate software. If authenticated, the subscriber may then be presented with a menu that allows the subscriber to review and/or change the communication options via key press or voice commands. Once the subscriber saves the changes, the changed communication option settings will be employed to handle future messages transmitted and/or received through either the telephony-centric network or the data-centric network.

As one of the options, the subscriber may be given a choice (with proper authentication) to use the unified messaging system to originate an outgoing call. The choice may be made via, for example, a predefined key press or voice command. This is useful in situations wherein the subscriber accesses his account at the unified messaging system through his toll-free number (e.g., from the airport or from someone else's telephone) and instructs the telephony server to connect his incoming call to an outgoing call to a provided destination telephone number and charges the cost to his account. In this manner, the unified messaging system may be employed as a convenient calling card.

A keyed digit may also represent an on-demand service selection chosen by the caller. In this case, the caller simply presses an appropriate key when prompted and employs one of the on-demand services is then employed to handle his call. Various on-demand services have been discussed in connection with FIGS. 3 and 4 and will not be repeated here for the sake of brevity.

FIG. 6 is a flow diagram depicting, in one embodiment, the relevant steps of a computer implemented process for handling access to the unified messaging system by a subscriber through a data-centric network (such as the Internet in the example of FIG. 6). The subscriber may wish to access the unified messaging system to, for example, listen to stored voice mail messages, view stored e-mail messages or facsimiles, send e-mail messages or facsimiles, or to review and/or modify the communication options. The first step 602 involves accessing the unified messaging system web site, using a unified messaging system web address (e.g., "unifiedmessagingssystem.com"), with user computer 100 through a data-centric network 102.

The web site request connects to the web server 122 via data link 104 and network interface system 105. Following connection to the web site, the unified messaging system web server 122 serves up a login page using, for example, ASP-active server pages (step 604). The next step (step 606) includes entering authentication data such as a subscriber identifier (ID), e.g., username and password, at the login page. The web server 122, after obtaining the authentication data, compares it with the subscriber account authentication data (step 608), which it obtains from the subscriber communication profile database from the database server. If

authenticated, the subscriber may then be presented with a graphical menu of the communication options (step 610) that allows the subscriber to retrieve his email/voicemail/fax messages, or review and/or modify the communication options via user computer 100 (step 612). Once the subscriber saves the changes (step 614), the modified communication option settings will be employed to handle future messages transmitted and/or received through either the telephony-centric network or the data-centric network.

Accordingly, the present invention provides a single centralized facility that gives a subscriber of various communication services (e.g., telephone, facsimile, pager, e-mail) the ability to review and modify his communication options (e.g., call forwarding, follow me service, alternate number, message alert, facsimile receiving, paging, routings and the like). This review and modification is done in an interactive and simplified manner, via either the data-centric network or the telephony-centric network.

The unified messaging system benefits a subscriber by integrating various communication services which up to now have existed as separate services. This is in sharp contrast to the prior art where the dual existence of the data-centric network and the telephony-centric network has forced the service providers to manage communication options as separate accounts.

This integration simplifies management, billing, and more importantly the routing of messages among the various services. The unified messaging system gives the subscriber more control with regards to how the world communicates to the subscriber. For example, a subscriber may specify that an incoming facsimile be forwarded to a computer for viewing or to a printer for printing, listen to e-mail messages through a telephone, receive pager notification when a facsimile is received, etc. The unified messaging system allows messages to be received, stored, retrieved, and/or forwarded without regard to the communication devices and/or networks employed for the transmission of the messages. In fact, the unified messaging system even gives non-subscribers choices with its on-demand services associated with some of the communication options.

The unified messaging system advantageously removes the burden of managing different physical devices and different accounts. The subscriber no longer has to access multiple accounts to modify options. As mentioned previously, a person who travels may wish to forward calls made from his home and office telephone numbers to his cellular telephone or hotel telephone. Likewise, he may wish to divert facsimiles sent to an office facsimile machine to a facsimile machine that is more local. While in a meeting, however, one may wish to temporarily divert the voice calls to a voice mail box or forwards it to another person for handling. To stay in touch, these communication options may need to be changed many times during the course of the day and/or each time one arrives at a new location.

Using the present invention, a person need only access the unified messaging system either with a telephone or a computer. The communication options may then be modified as needed with a few key strokes. The subscriber has the ability to review communication options at a single facility and no longer has to recall communication options from memory or contact each service provider.

Furthermore, the present invention advantageously allows remote access to the unified messaging system from any location that is connected to the data-centric network or the telephony-centric network. The subscriber no longer has to be physically present at the forwarding origin to modify the

forwarding option. This advantage leads to yet another advantage in that the unified messaging system may be used as a calling card. The subscriber if located at the airport, for example, contacts his unified messaging system toll-free telephone number. The system then allows the subscriber the option of rerouting this call to another location.

Also, the present invention advantageously allows the subscriber the convenience of one telephone number (or two, including a toll-free 800 number). Multiple number confusion is avoided by connecting multiple numbers through the one number of the unified messaging system.

While this invention has been described in terms of several preferred embodiments, there are alterations, permutations, and equivalents which fall within the scope of this invention. It should also be noted that there are many alternative ways of implementing the methods and apparatuses of the present invention. It is therefore intended that the following appended claims be interpreted as including all such alterations, permutations, and equivalents as fall within the true spirit and scope of the present invention.

What is claimed is:

1. A computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to said plurality of communication services through either a telephony-centric network using a telephone or a data-centric network using a display terminal, said computer-implemented control center comprising:
 - a subscriber communication profile database, said subscriber communication profile database having therein an account pertaining to said subscriber, said account including said communication options for said subscriber, said communication options including parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services;
 - a computer server coupled to exchange data with said subscriber communication profile database, said computer server being configured to generate a single graphical menu for displaying said communication options for each of said communication services at the same time, and to visually display said single graphical menu on said display terminal when said subscriber employs said display terminal to access said computer-implemented control center through said data-centric network, said computer server also being configured to receive from said subscriber via said display terminal and said data-centric network a first change to said communication options and to update said first change to said account in said subscriber communication profile database, wherein said single graphical menu comprises at least a first display area for showing a first communication service and a first communication option associated with said first communication service, and a second display area for showing a second communication service and a second communication option associated with said second communication service, the first display area and the second display area being displayed at the same time in said single graphical menu, and wherein the first communication option includes a first enable option for enabling or disabling the first communication service, and wherein the second communication option includes a second enable option for enabling or disabling the second communication service; and
 - a telephony server coupled to exchange data with said communication profile database, said telephony server

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being configured to audibly represent said communication options to said telephone when said subscriber employs said telephone to access said computer-implemented control center, said telephony server also being configured to receive from said subscriber via said telephone a second change to said communication options and to update said second change to said account in said subscriber communication profile database.

2. The computer-implemented control center of claim 1 further comprising:

a pager server coupled to exchange data with said communication profile database, wherein said communication services further include a pager alert service and wherein said communication options further include a pager alert option, said pager server being configured to transmit, when said pager alert option is enabled, an alert to a pager through said telephony-centric network if an e-mail message is received by said subscriber through said data-centric network, said pager having a page number that is also specified as part of said pager alert option.

3. The computer-implemented control center of claim 1 wherein said plurality of communication services include a call forwarding ice configured to permit said subscriber to specify whether a call received at a telephone number associated with said account be forwarded to a forwarding telephone number, said communication options including a call forwarding enable option and said forwarding telephone number.

4. The computer-implemented control center of claim 1 wherein said plurality of communication services include a follow me service, said communication options including a follow-me service enable option associated with said follow-me service and a set of telephone numbers, said follow-me service enable option when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call by said caller to a telephone associated with said set of telephone numbers.

5. The computer-implemented control center of claim 4 wherein said follow me service is configured to ring in sequence each one of telephones associated said set of telephone numbers until said call by said caller is accepted.

6. The computer-implemented control center of claim 5 wherein said follow-me service is configured to ring first a last-found telephone number, said last-found telephone number representing a telephone number associated with a phone previously employed by said subscriber to answer an immediately preceding call to said subscriber.

7. The computer-implemented control center of claim 1 wherein said plurality of communication services include an alternate number service, said communication options including an alternate number service enable option associated with said alternate number service and an alternate telephone number, said alternate number service enable option, when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call by said caller to an alternate telephone associated with said alternate telephone number.

8. The computer implemented control center of claim 1 wherein the first communication option includes a first routing option, and wherein the second communication option includes a second routing option.

9. The computer implemented control center of claim 8 wherein either the first routing option or the second routing option includes a plurality of routings.

10. The computer implemented control center of claim 1 wherein the first communication service and the second

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communication service are selected from a call forwarding service, a follow me service, an alternate number service, a message alert service, a fax receiving service or a paging service.

11. The computer implemented control center of claim 1 wherein said plurality of communication services comprise an e-mail service configured to permit said subscriber to receive and transmit e-mails through said data centric network, and a voice telephone service configured to permit said subscriber to receive and transmit voice calls through said telephony-centric network.

12. The computer-implemented control center of claim 11 wherein said plurality of communication services include a facsimile service configured to permit said subscriber to receive at said unified messaging system a facsimile through said telephony-centric network and said telephony server, said communication options including a facsimile receiving enable option associated with said facsimile service.

13. The computer-implemented control center as recited in claims 12 wherein said facsimile and said voice telephone service are both implemented using a single telephone number.

14. The computer-implemented control center of claim 1 further comprising a pager server coupled to exchange data with said communication profile database, wherein said communication services include a pager alert service, and wherein said communication options include a pager alert enable option associated with said pager alert service and a pager number, said pager alert option when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a page by said caller to said pager number.

15. The computer-implemented control center of claim 1 wherein at least one of the communication service is an on-demand communication service, and wherein said communication options include an on-demand communication enable option associated with said on-demand communication service and a forwarding number, said on-demand communication enable option when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call or message by said caller to said forwarding number.

16. A computer-implemented method for permitting a subscriber of a unified messaging system to customize communication options pertaining to a plurality of communication services associated with said unified messaging system through either a telephony-centric network using a telephone or a data-centric network using a display terminal, said plurality of communication services comprising a voice telephone service and e-mail service, said communication options being accessible via display terminals coupled to said data-centric network and via telephones coupled to said telephony-centric network, said computer-implemented method comprising:

receiving, via either a first display terminal of said display terminals or a first telephone of said telephones, a request to access an account pertaining to said subscriber, said account including said communication options for said subscriber;

obtaining from a subscriber communication profile database said communication options for said subscriber in said account, said communication options including parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services, wherein at least one of the communication services is an on-demand communication service, and wherein

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said communication options include an on-demand communication enable option and a forwarding number associated with said on-demand communication service, said on-demand communication enable option when enabled by said subscriber, permits a caller to elect to forward a call or message by said caller to said forwarding number;

presenting said communication options for said subscriber on respective one of said first display terminals or through said first telephone from which said request to access is received, said communication options being visually presented in a single graphical menu arranged for displaying said communication options for each of the communication services at the same time on said first display terminal via an individualized web page associated with said subscriber or audibly presented at said first telephone;

receiving communication setting edits from said subscriber through said respective one of said first display terminal and said first telephone from which said request to access is received, said communication setting edits pertaining to said communication options; and

modifying said communication options in accordance with said communication setting edits, wherein said communication services are subsequently controlled in accordance with said communication options after said modifying.

17. The computer-implemented method of claim 16 wherein said plurality of communication services include a call forwarding service, said receiving said communication edits includes receiving at least one of a call forwarding enable option associated with said call forwarding service and a forwarding telephone number associated with said call forwarding service, said call forwarding enable option, when enabled by said subscriber, forwards calls destined for said subscriber at said unified messaging system to said forwarding telephone number, and wherein said modifying said communication options includes modifying a setting associated with said forwarding service in accordance with said at least one of said call forwarding enable option and said forwarding telephone number.

18. The computer-implemented method of claim 16 wherein said plurality of communication services include a follow-me service, said receiving said communication edits includes receiving, as one of said communication setting edits, at least one of a follow-me service enable option associated with said follow-me service and a set of telephone numbers, said follow-me service enable option when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call by said caller to a telephone associated with said set of telephone numbers, and wherein said modifying said communication options includes modifying a setting associated with said follow-me service in accordance with said at least one of said follow-me service enable option and said set of telephone numbers.

19. A computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to said plurality of communication services through either a telephony-centric network using a telephone or a data-centric network using a display terminal, said computer-implemented control center comprising:

a subscriber communication profile database, said subscriber communication profile database having therein

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an account pertaining to said subscriber, said account including said communication options for said subscriber, said communication options including parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services, wherein at least one of the communication services is an on-demand communication service, and wherein said communication options include an on-demand communication enable option and a forwarding number associated with said on-demand communication service, said on-demand communication enable option when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call or message by said caller to said forwarding number;

a computer server coupled to exchange data with said subscriber communication profile database, said computer server being configured to generate a single graphical menu for displaying said communication options for each of said communication services at the same time, and to visually display said single graphical menu on said display terminal when said subscriber employs said display terminal to access said computer-implemented control center through said data-centric network, said computer server also being configured to receive from said subscriber via said display terminal and said data-centric network a first change to said communication options and to update said first change to said account in said subscriber communication profile database;

a telephony server coupled to exchange data with said communication profile database, said telephony server being configured to audibly represent said communication options to said telephone when said subscriber employs said telephone to access said computer-implemented control center, said telephony server also being configured to receive from said subscriber via said telephone a second change to said communication options and to update said second change to said account in said subscriber communication profile database.

20. A computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to said plurality of communication services through either a telephony-centric network using a telephone or a data-centric network using a display terminal, said computer-implemented control center comprising:

a subscriber communication profile database, said subscriber communication profile database having therein an account pertaining to said subscriber, said account including said communication options for said subscriber, said communication options including parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services;

a computer server coupled to exchange data with said subscriber communication profile database, said computer server being configured to generate a single graphical menu for displaying said communication options for each of said communication services at the same time, and to visually display said single graphical menu on said display terminal when said subscriber employs said display terminal to access said computer-implemented control center through said data-centric network, said computer server also being configured to

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receive from said subscriber via said display terminal
and said data-centric network a first change to said
communication options and to update said first change
to said account in said subscriber communication pro-
file database, wherein said single graphical menu com- 5
prises at least a first display area for showing a first
communication service, and a first communication
option associated with said first communication
service, and a second display area for showing a second
communication service, and a second communication 10
option associated with said second communication
service, the first display area and the second display
area being displayed at the same time in said single
graphical menu, and wherein the first communication
service and the second communication service are 15
selected from a call forwarding service, a follow me

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service, an alternate number service, a message alert
service, a fax receiving service or a paging service,
a telephony server coupled to exchange data with said
communication profile database, said telephony server
being configured to audibly represent said communi-
cation options to said telephone when said subscriber
employs said telephone to access said computer-
implemented control center, said telephony server also
being configured to receive from said subscriber via
said telephone a second change to said communication
options and to update said second change to said
account in said subscriber communication profile data-
base.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,263,064 B1
DATED : July 17, 2001
INVENTOR(S) : O'Neal et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 5,

Line 54, "referred" should read -- preferred --.

Column 7,

Line 37, "(PN)" should read -- (VPN) --.

Column 19,

Line 24, "ice" should read -- service --.

Column 20,

Line 34, "service" should read -- services --.

Signed and Sealed this

Seventh Day of May, 2002

Attest:

A handwritten signature in black ink, appearing to read "James E. Rogan", with a horizontal line drawn underneath it.

Attesting Officer

JAMES E. ROGAN
Director of the United States Patent and Trademark Office

Exhibit 5

(12) **United States Patent**
O’Neal et al.

(10) **Patent No.:** **US 6,728,357 B2**
(45) **Date of Patent:** **Apr. 27, 2004**

(54) **CENTRALIZED COMMUNICATION CONTROL CENTER AND METHODS THEREFOR**

(75) Inventors: **Stephen C. O’Neal**, San Francisco, CA (US); **John Jiang**, Danville, CA (US)

(73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 483 days.

(21) Appl. No.: **09/907,051**

(22) Filed: **Jul. 17, 2001**

(65) **Prior Publication Data**
US 2002/0110231 A1 Aug. 15, 2002

Related U.S. Application Data

(63) Continuation of application No. 09/239,585, filed on Jan. 29, 1999, now Pat. No. 6,263,064.

(51) **Int. Cl.⁷** **H04M 3/42**

(52) **U.S. Cl.** **379/201.04**; 379/88.16; 379/88.13; 379/211.03

(58) **Field of Search** 379/88.12–88.17, 379/88.22–88.28, 90.01, 201.01, 201.02, 201.04, 201.12, 211.01–211.03, 212.01, 230, 213.01, 214.01, 217.01, 209.01, 210.01; 370/351–354

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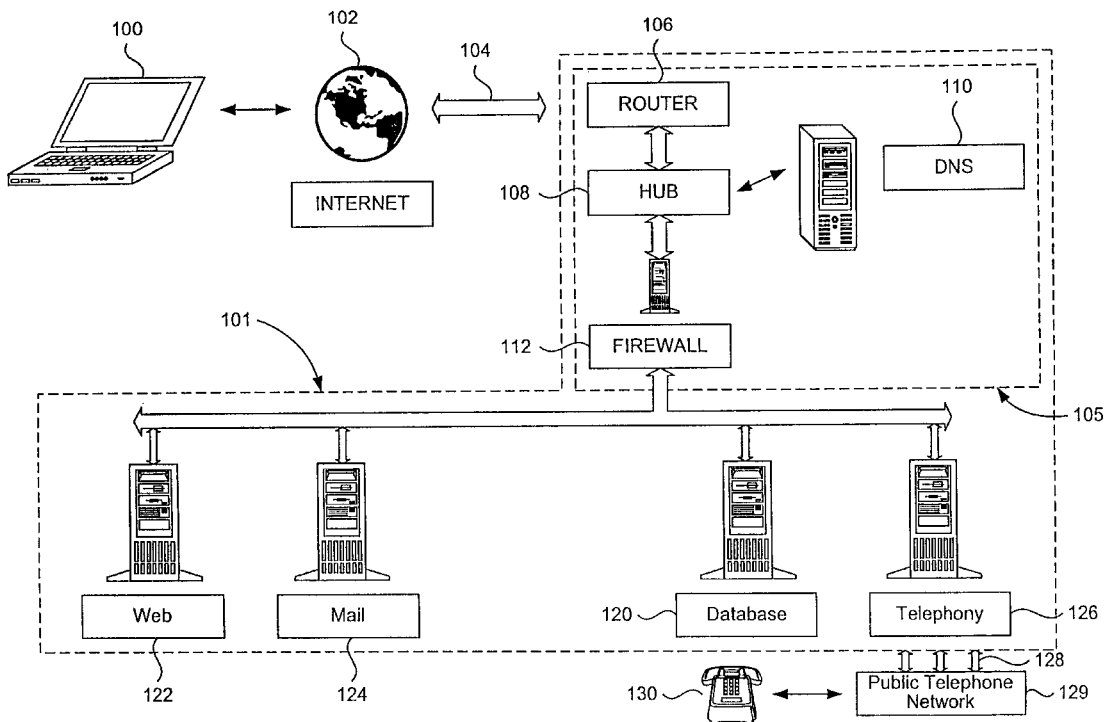
(List continued on next page.)

Primary Examiner—Roland G. Foster
(74) *Attorney, Agent, or Firm*—Senniger, Powers, Leavitt & Roedel

(57) **ABSTRACT**

A computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified mess aging system to customize communication options pertaining to the plurality of communication services. The communication options include parameters associated with individual ones of the plurality of the communication services and routings among the plurality of communication services. The plurality of communication services comprise a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network. The communication options are accessible via display terminals coupled to the data-centric network and via telephones coupled to the telephony-centric network.

18 Claims, 6 Drawing Sheets



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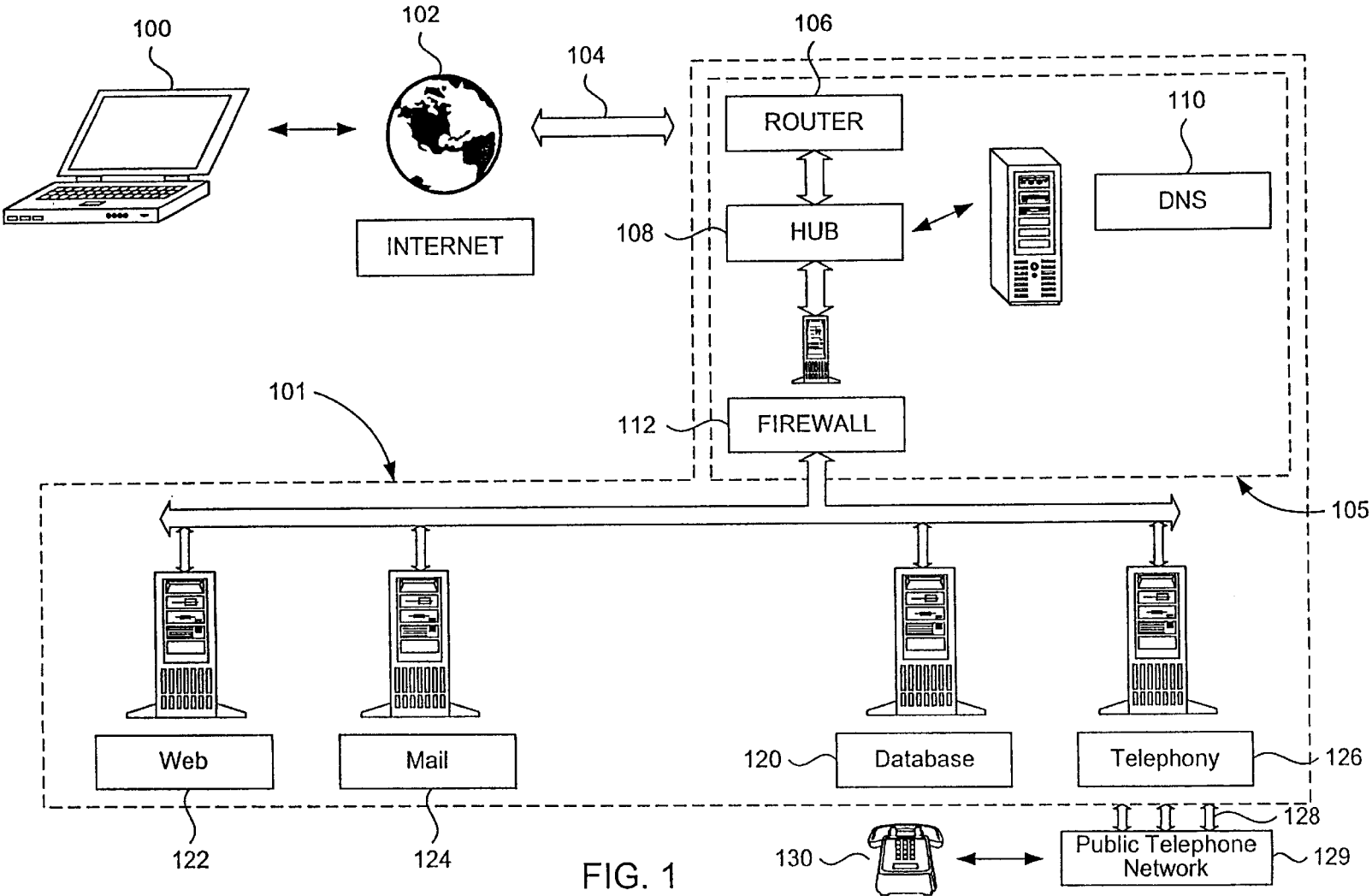


FIG. 1

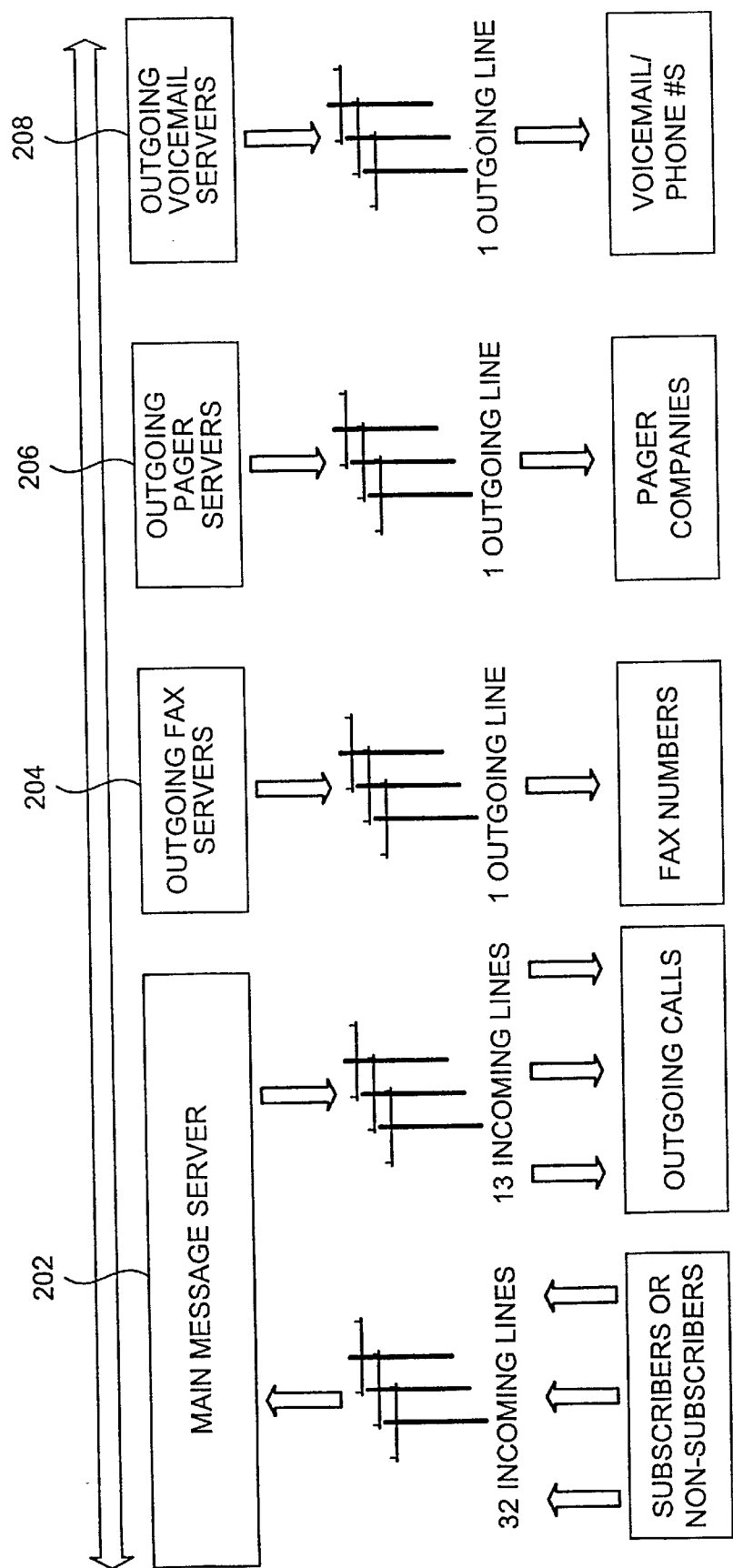


FIG. 2

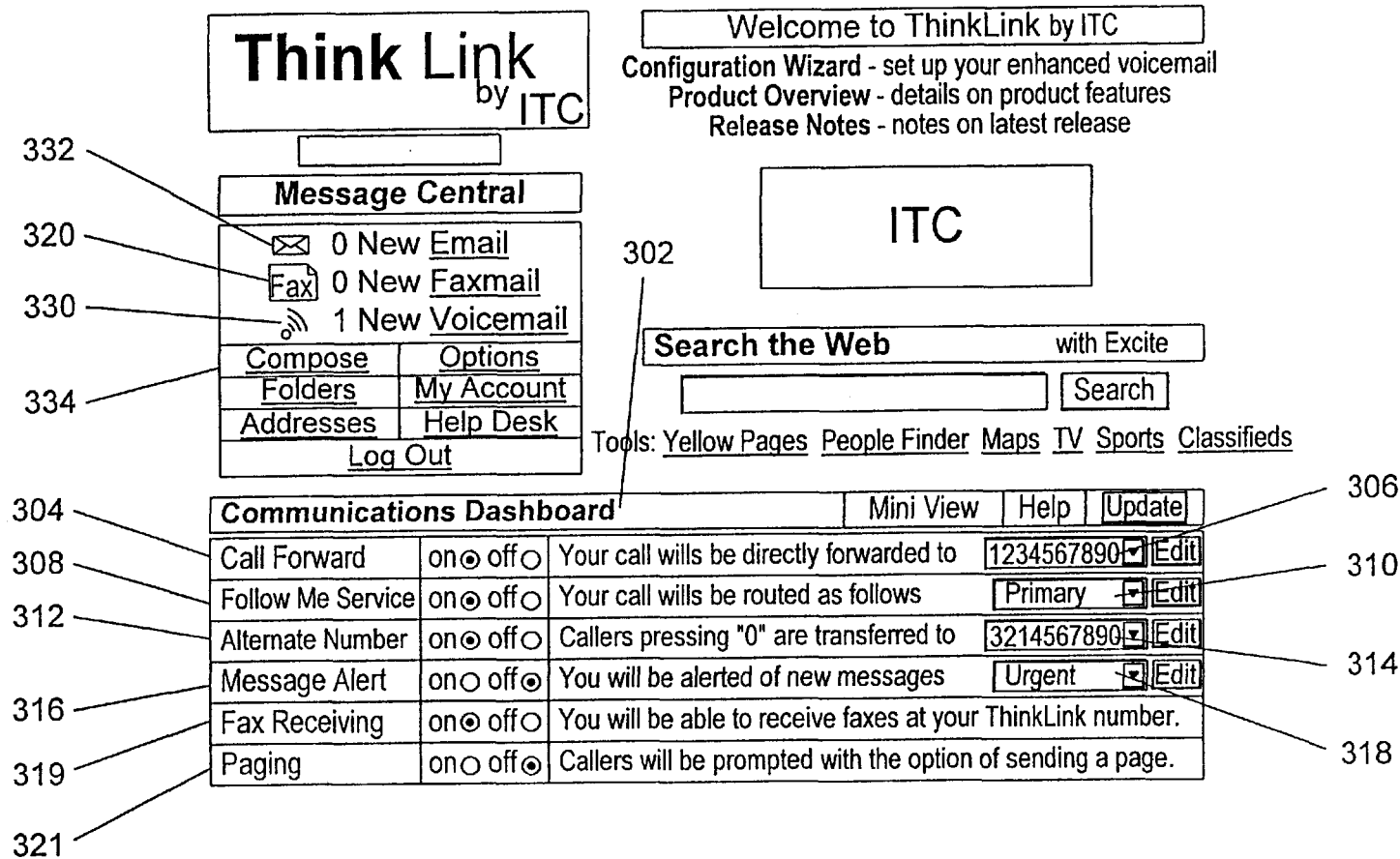


FIG. 3

Options Help

Advanced Communications Settings Save and Close Cancel

Call Forward* on ☒ off ☐

Forward calls to (123) 456-7890 (H) (Cell) (W) (1) (2)

Follow Me* on ☒ off ☐

Follow Me call routing Primary ▼

Primary	Secondary
1. (123) 456-7890	1.
2. (123) 789-4560	2.
3. (321) 123-4567	3.

Override:

Alternate Number on ☐ off ☒

"0" forward to (321) 456-7890 (H) (Cell) (W) (1) (2)

Paging on ☐ off ☒

Number Pin

(NOTE: you must enter PIN if required by your pager service)

Fax Receiving on ☐ off ☐

☐ Forward faxes to (Home Fax) (Work Fax)

Fax Sending Send attempts 1 ▼

Interval between attempts (min) 5 ▼

Message Alert on ☐ off ☒

Urgent messages ▼

Includes:

- new voicemail
- new voicemail
- new email

(in the folders selected at right) ☐ Inbox

[Personal Numbers] *NOTE: When both Call Forward and Follow Me are turned on, the caller is forwarded first. If there is no answer at the Forward number, the caller is given the option to use the Follow Me feature.

FIG. 4

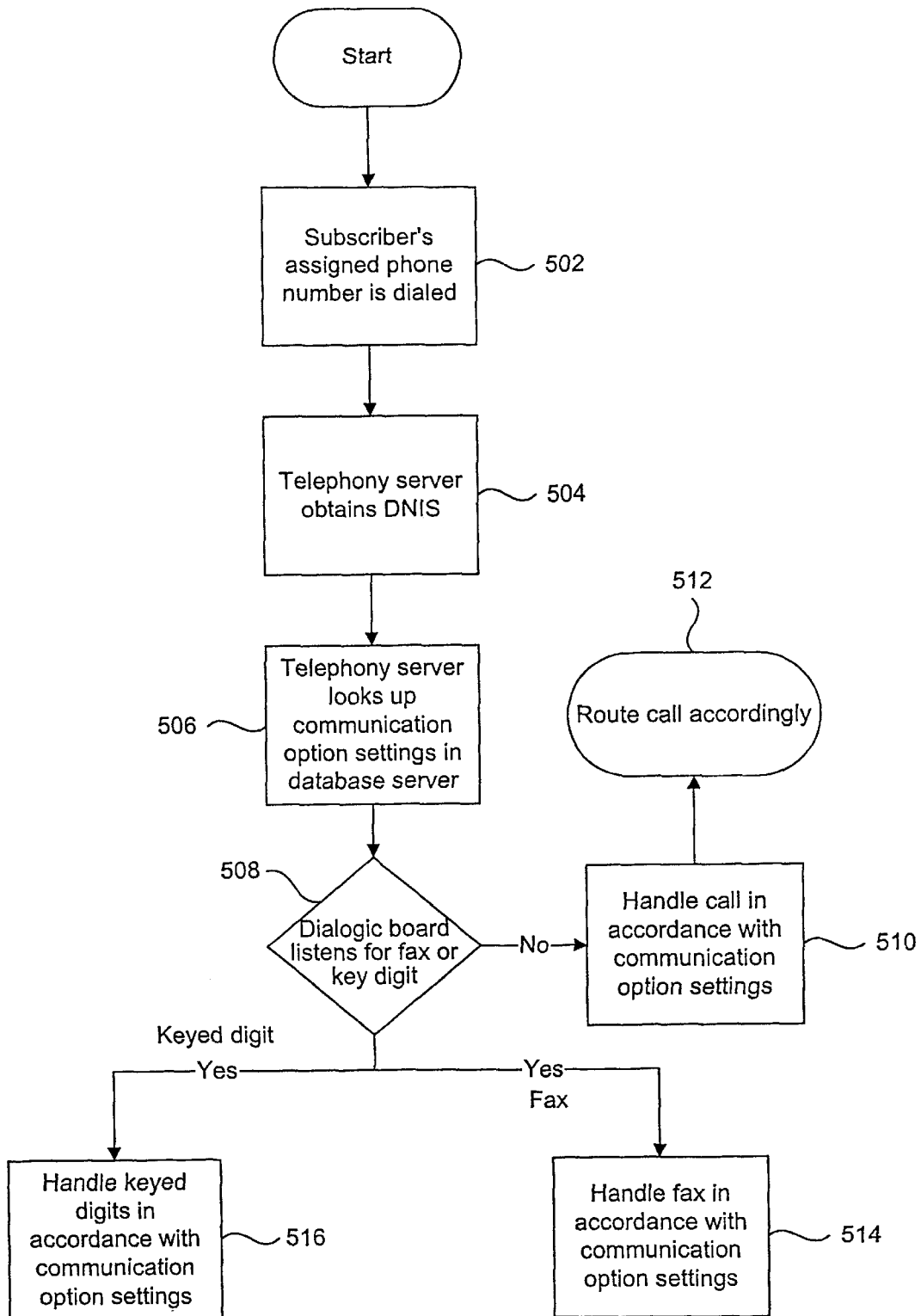


FIG. 5

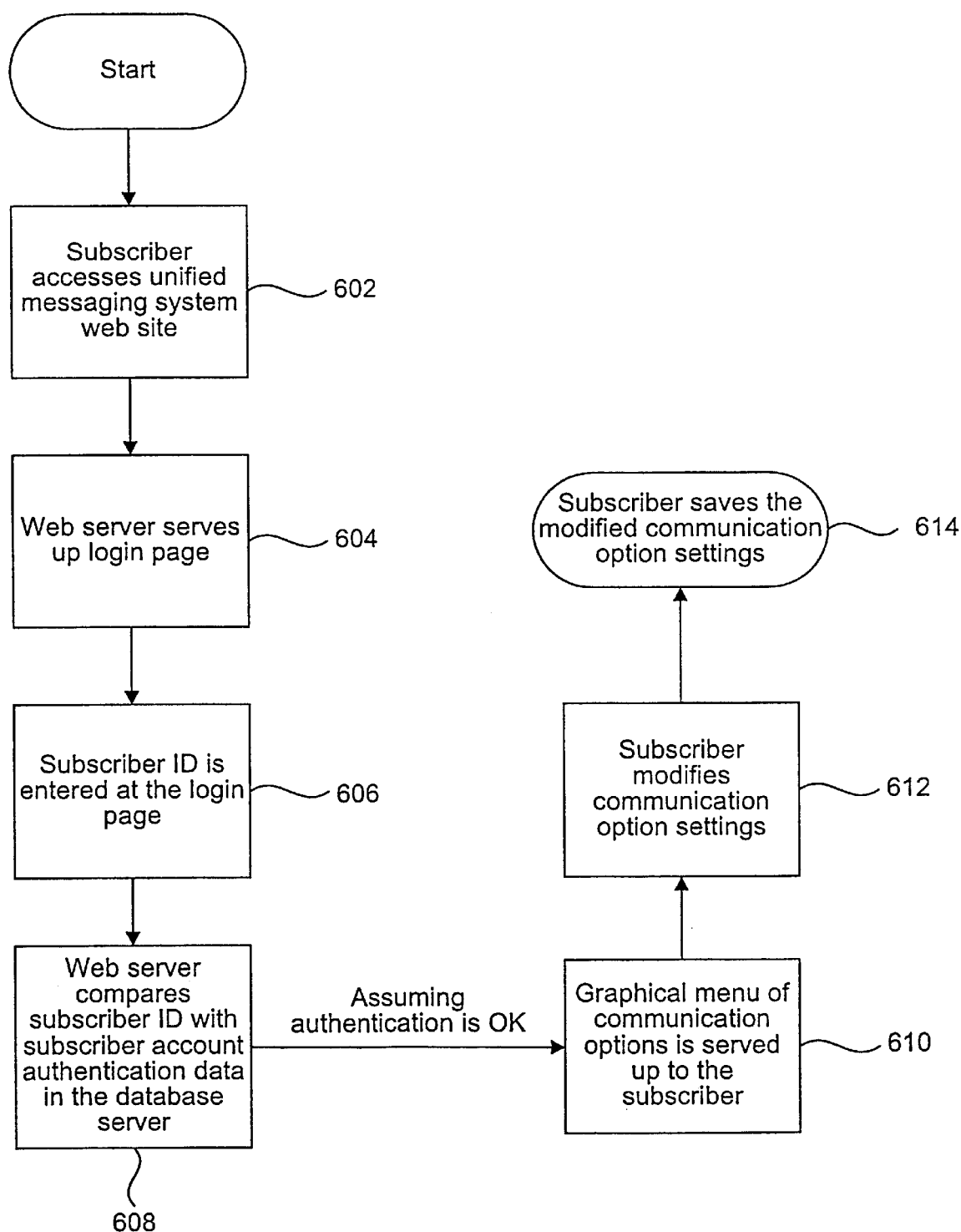


FIG. 6

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**CENTRALIZED COMMUNICATION
CONTROL CENTER AND METHODS
THEREFOR**

**CROSS REFERENCE TO RELATED
APPLICATIONS**

The present application is a continuation of U.S. patent application Ser. No. 09/239,585, filed on Jan. 29, 1999, now U.S. Pat. No. 6,263,064.

application Ser. No. 09/239,560, filed Jan. 29, 1999, entitled "INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM DISTRIBUTED OVER A LARGE GEOGRAPHICAL AREA";

U.S. Pat. No. 6,411,695, issued Jun. 25, 2002, entitled "A SYSTEM AND METHOD FOR PROVIDING UNIFIED MESSAGING TO A USER WITH A THIN WEB BROWSER";

U.S. Pat. No. 6,463,145, issued Oct. 8, 2002, entitled "COMPUTER-IMPLEMENTED CALL FORWARDING OPTIONS AND METHODS THEREFOR IN A UNIFIED MESSAGING SYSTEM";

application Ser. No. 09/240,893, filed Jan. 29, 1999, entitled "INTERACTIVE BILLING SYSTEM UTILIZING A THIN WEB CLIENT INTERFACE";

application Ser. No. 09/240,368, filed Jan. 29, 1999, entitled "A SYSTEM AND METHOD TO MANAGE PHONE SOURCED MESSAGES";

application Ser. No. 09/240,434, filed Jan. 29, 1999, entitled "METHOD AND APPARATUS FOR NETWORK INDEPENDENT INITIATION OF TELEPHONY";

application Ser. No. 09/240,435, filed Jan. 29, 1999, entitled "APPARATUS AND METHOD FOR DEVICE INDEPENDENT MESSAGING NOTIFICATION";

application Ser. No. 09/240,436, filed Jan. 29, 1999, entitled "APPARATUS AND METHOD FOR CHANNEL-TRANSPARENT MULTIMEDIA BROADCAST MESSAGING";

application Ser. No. 09/239,589, filed Jan. 29, 1999, entitled "VOICE ACCESS THROUGH A DATA-CENTRIC NETWORK TO AN INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM".

BACKGROUND OF THE INVENTION

The present invention relates to communication services available via a data-centric network (i.e., a network that carries digital data) and a telephony-centric network (i.e., a network that carries telephony information such as voice, fax, pager, and the like). More particularly, the present invention relates to a centralized facility and methods therefor that allow a subscriber of various communication services to review and customize his communication options, in an interactive and simplified manner, via either the data-centric network or the telephony-centric network.

Both the data-centric network (e.g., a distributed computer network) and the telephony-centric network (e.g., public telephone network) have existed for some time. Broadly speaking, the data-centric network (such as the Internet) may be thought of as a global computer network that connects millions of computer terminals all over the world in such a way that digitized information can be exchanged irrespective of the different hardware and software platforms that may be utilized to gain access to the data-centric network. People and businesses around the world use the data-centric network to retrieve information,

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communicate and conduct business globally, and access a vast array of services and resources on-line. In a similar manner, the telephony-centric network (whether wired or wireless) may also be thought of as another global network that connects the millions of telephony devices (such as voice-oriented telephones, pagers, facsimile machines, voice mail boxes, and the like) together in such a way that a user at one of the telephony devices can readily transmit information to other telephony devices irrespective of geographic boundaries.

In the past, these two networks existed as separate domains. This is because the widely accessible data-centric network is a fairly recent phenomenon. For decades, the only network that has been available to the masses is the analog telephony-centric network, starting with the telegraph network of the nineteenth century. However, as more and more of the services traditionally offered through the telephony-centric network are being offered in a digital format by the data-centric network, the distinction between the data-centric network and the telephony-centric network begins to blur. Irrespective of whether these two networks exist as separate networks physically or conceptually going forward, the legacies of their separate existence can be seen in the various different communication services and communication devices that currently exist.

By way of example, there exist many different communication devices and services available today to allow a person to communicate to another person, e.g., telephones, facsimile machines, electronic mail (e-mail), pagers, voice mail, and the like. Generally speaking, a telephone is a communication device employed to transmit and receive speech and other sounds. A facsimile machine is a communication device to transmit and receive graphical data. A pager is a highly portable device that allows its user to receive data, and in some cases transmit limited data to a pager service provider. A voice mail box is essentially a service that allows one person to temporarily store telephone messages for retrieval by another. E-mail services allow e-mail users to transmit and receive data from computer terminals connected to the data-centric network. All these devices and services are well known in the art and will not be elaborated further for the sake of brevity.

Currently, these communication services are viewed, both by the service providers who create and maintain the network infrastructure and the subscribers who employ the devices and networks for communication, as separate services. This is due, partly but not entirely, to past government deregulation efforts and gradual technological evolution that have given rise to different service providers, all competing to provide the communication services to individual consumers. Thus, it is not unusual for a consumer to have an e-mail account with one service provider, a telephone account with another service provider and a pager account with yet another service provider. Even if the different services are contracted through a single service provider, the dual existence of the data-centric network and the telephony-centric network, as well as existing billing and account management infrastructures, often force the service provider to manage each of these services as a separate account.

One of the consequences of having different accounts for different services is the proliferation of telephone numbers, facsimile numbers, and pager numbers that a typical consumer must deal with. Thus, it is not at all unusual for a consumer to have a home telephone number, a work telephone number, one or more cellular telephone numbers, a pager number, and a facsimile number, with each of these

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numbers being assigned to a different communication device. Not only are these various numbers difficult to remember for the consumer, they are confusing to others.

A more serious consequence is the burden on the consumer who needs to manage the communication options associated with the different services (which are now assigned to different physical devices and managed as different accounts) to ensure that incoming and outgoing messages are properly handled. By way of example, a person who travels may wish to forward voice calls made to his home and office telephone numbers to his cellular telephone or hotel telephone. Likewise, he may wish to divert facsimiles sent to his office facsimile machine to a facsimile machine that is more local. While in a meeting, however, he may wish to temporarily divert the voice calls to his voice mail box or forward it to another person for handling. To stay in touch, these communication options may need to be changed many times during the course of the day and/or each time he arrives at a new location.

To accomplish the above, the person in the above example currently needs to first ascertain the current communication option settings associated with the various services that he uses. Unless he is diligent in noting and/or remembering the recent changes in the communication option settings, he may need to call each of the service providers to find out what the current communication option settings are. Assuming that he knows the current communication option settings and such calls need not be made, the user must still access each communication device and/or contact each service provider to reroute the incoming and outgoing messages.

By way of example, some facsimile machines currently allow the user to forward the incoming facsimile to another facsimile machine by entering a particular combination of the forwarding number and predefined codes on the facsimile machine keypad. Likewise, many telephone systems require the user to physically enter the forwarding telephone number and predefined codes on the keypad of the telephone from which forwarding originates. However, this requires the user to be physically present at the facsimile machine or telephone from which forwarding originates. If he owns one of these telephones or facsimile machines and is on the road, such forwarding would not be possible absent help from another person who has such physical access.

The fact that each communication service is treated as a different account also requires the user in the example above to access each account and/or service provider to accomplish the changes. Thus, multiple calls may need to be made to change the communication option settings associated with the different communication services. Even with automated response systems in place to handle such changes, these calls take time and can aggravate even the most patient users, especially if multiple calls need to be made to the multiple service providers each time he moves from one location to another. As can be appreciated by those skilled in the art, such approach is at best time consuming and unwieldy.

More typically, a busy user would just not bother changing the communication options associated with the various communication devices that he owns. He would rather suffer the possibility of missing out on some messages than constantly contacting the different service providers and making changes on individual services. In this case, the communication services that he owns are not employed to their fullest potential.

In view of the forgoing there are desired improved techniques for allowing a user of communication services to review and customize the communication options associated with these services in a simplified and convenient manner.

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SUMMARY OF THE INVENTION

The invention relates, in one embodiment, to a computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the plurality of communication services. The communication options include parameters associated with individual ones of the plurality of the communication services and routings among the plurality of communication services. The plurality of communication services comprising a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network. The communication options is accessible via display terminals coupled to the data-centric network and via telephones coupled to the telephony-centric network. The computer-implemented control center includes a subscriber communication profile database. The subscriber communication profile database has therein an account pertaining to the subscriber. The account includes the communication options for the subscriber.

There is also included a computer server coupled to exchange data with the subscriber communication profile database. The computer server is configured to visually display the communication options on one of the display terminals when the subscriber employs the one of the display terminals to access the computer-implemented control center. The computer server also is configured to receive from the subscriber via the one of the display terminals a first change to the communication options and to update the first change to the account in the subscriber communication profile database.

There is further included a telephony server coupled to exchange data with the communication profile database. The telephony server is configured to audibly represent the communication options to one of the telephones when the subscriber employs the one of the telephones to access the computer-implemented control center. The telephony server also is configured to receive from the subscriber via the one of the telephones a second change to the communication options and to update the second change to the account in the subscriber communication profile database.

The invention relates, in another embodiment, to a computer-implemented method for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the plurality of communication services. The communication options include parameters associated with individual ones of the plurality of the communication services and routings among the plurality of communication services. The plurality of communication services includes a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network. The communication options are accessible via display terminals coupled to the data-centric network and via telephones coupled to the telephony-centric network. The method includes providing a subscriber communication profile database. The subscriber communication profile database has therein an account pertaining to the subscriber. The account includes the communication options for the subscriber.

There is also included visually displaying the communication options on one of the display terminals, using a computer server coupled to exchange data with the subscriber communication profile database, when the subscriber employs the one of the display terminals to access the computer-implemented control center. There is further included receiving from the subscriber via the one of the

display terminals at the computer server a first change to the communication options. The first change to the communication options pertains to either the voice telephone service or the e-mail service. Additionally, there is included updating the first change to the account in the subscriber communication profile database, thereby resulting in a first updated subscriber communication profile database, wherein subsequent messages to the subscriber at the unified messaging system, including the voice telephone service, are handled in accordance with the first updated subscriber communication profile database.

These and other features of the present invention will be described in more detail below in the detailed description of the invention and in conjunction with the following figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

FIG. 1 depicts, in one embodiment, the general overview of the unified message system.

FIG. 2 illustrates, in one embodiment, how the 48 telephone lines provided per T1 link may be divided among the sub-servers of the telephony server.

FIG. 3, in one embodiment, the user interface portion of the computer-implemented control center, representing the visual display panel for displaying the communication options pertaining to a particular subscriber on a computer display screen.

FIG. 4 shows the communication options in greater detail, in accordance with one embodiment of the present invention.

FIG. 5 is a flow diagram depicting, in one embodiment, the relevant steps of a computer-implemented process for handling access to the unified messaging system through the telephony-centric network by a subscribing or a non-subscribing caller.

FIG. 6 is a flow diagram depicting, in one embodiment, the relevant steps of a computer implemented process for handling access to the unified messaging system through a computer network by a subscriber.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention will now be described in detail with reference to a few preferred embodiments thereof and as illustrated in the accompanying drawings. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be obvious, however, to one skilled in the art, that the present invention may be practiced without some or all of these specific details. In other instances, well known process steps have not been described in detail in order not to unnecessarily obscure the present invention.

In accordance with one aspect of the present invention, there is provided a computer-implemented control center which is coupled to the data-centric network and the telephony-centric network, and which allows a user to access, using either a telephone or a computer, the communication options associated with the various communication services of a unified messaging service. Unlike the prior art approach which requires the user to contact individual service providers/accounts and/or to access individual communication devices to review and change the communica-

tion options associated therewith, the computer-implemented control center allows the communication options associated with the various communication services to be accessed substantially all at once. That is, the computer-implemented control center provides a single central facility through which the communication option settings associated with the different communication services may be reviewed and/or modified.

In accordance with one aspect of the present invention, the communication options, which include the options associated with individual communication services as well as routings among the different individual communication services, are accessible using either a computer network interface (e.g., a web page) or a telephone network interface (e.g., via a telephone). The communication option settings themselves do not reside with individual communication devices or require access through a particular communication device (such as with the assigned facsimile machines or telephones discussed earlier). Rather, the communication option settings are centralized within the universally accessible computer-implemented control center and can be utilized to properly control the communication options associated with the various services and to facilitate control of the routings therebetween. More importantly, they can be reviewed and modified by a properly authenticated subscriber of the unified messaging service through any suitable computer or telephone irrespective of the geographic location from which the accessing and/or modifications are made.

In the aforementioned co-pending patent applications entitled "INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM DISTRIBUTED OVER A LARGE GEOGRAPHICAL AREA" (application Ser. No. 09/239,560, filed Jan. 29, 1999), and "A SYSTEM AND METHOD FOR PROVIDING UNIFIED MESSAGING TO A USER WITH A THIN WEB BROWSER" (U.S. Pat. No. 6,411,685, issued Jun. 25, 2002), which are all incorporated herein by reference, some inventive unified messaging services and their various features are disclosed. Although the present invention may be implemented on any unified messaging system, reference may be made to the above-mentioned co-pending patent applications for details pertaining to preferable unified messaging systems on which the present invention may be implemented.

In general terms, a unified messaging system benefits a user by integrating various communication services, which up to now have existed as separate services. The integration facilitates simplified management, billing, and more importantly the routing of messages among the various services. With a unified messaging service, a user may, for example, specify that an incoming facsimile be forwarded to a computer for viewing or to a printer for printing, listen to e-mail messages through a telephone, receive pager notification when a facsimile is received, or the like. Within limits, a unified messaging system allows messages to be received, stored, retrieved, and/or forwarded (in the original format or in a different/abbreviated format) without regard to the communication devices and/or networks (i.e., data-centric vs. telephony-centric) employed for the transmission of the messages.

A unified messaging system implemented on a data-centric network takes the unified messaging system concept a step further by internally storing and manipulating the messages in a digital format irrespective of whether the message was received and/or will be sent in the digital or analog format. As is well known, digital formatting increases the flexibility with which information contained in

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the messages can be analyzed, stored, manipulated, and/or routed among the various communication devices. More importantly, the implementation of the unified messaging system on a data-centric network permits the subscriber to access his account through any computer or telephone irrespective of the geographic location from which the accessing and/or modifications are made.

To facilitate discussion, FIG. 1 depicts, in accordance with one embodiment of the present invention, the general overview of a unified message system 101. With reference to FIG. 1, there is shown a user computer 100, representing a computer that may be employed to access and/or modify the communication options associated with the communication services offered by the unified messaging system. Although user computer 100 is shown to be a desktop personal computer (such as an Intel-based personal computer), user computer 100 may in fact represent any computing device capable of accessing the data-centric network (represented by reference 102 in FIG. 1). By way of example, user computer 100 may represent a laptop computer, which may access the data-centric network either through wired connections or in a wireless manner. As another example, user computer 100 may represent a personal digital assistant (PDA) or a palm-top computer, or a thin-client type computer.

Data-centric network 102 may represent any computer network which couples together users from geographically dispersed locations. In a preferred embodiment, data-centric network 102 represents the Internet, although data-centric network 102 may also represent a Wide Area Network (WAN), a Local Area Network (LAN), a Virtual Private Network (VPN) or any similarly suitable networking arrangement that allows users to log in from a remote terminal.

With reference to FIG. 1, there is shown data link 104, representing the high speed data lines for transmitting and receiving data between unified messaging system 101 and data-centric network 102. In a preferred embodiment, data link 104 is implemented by high speed T1 data lines, although other types of data lines such as fiber optics may also be employed. A network interface system 105 couples data link 104 to the remainder of unified messaging system 101, which is shown to include four servers as shown (the servers are discussed later herein).

Network interface system 105 represents the interface system that ensures data is properly transmitted and received between unified messaging system 101 and data-centric network 102. Of course network interface system 105 may vary depending on the implementations of the data-centric network and/or the portion of unified messaging system 101 to which network interface system 105 is coupled.

In the case of the Internet, one current preferred implementation of network interface system 105 may include a router 106, a hub 108, a DNS (Domain Name System) facility 110, and a firewall 112. Typically, the router 106 is a piece of hardware or software that examines the IP address of data packets and determines the routing of the data packets based on the IP address.

Router 106 acts cooperatively with hub 108 and DNS facility 110 to permit properly addressed data packets to be received through firewall 112. Router 106, hub 108, DNS facility 110, and firewall 112 are conventional and will not be belabored here for the sake of brevity.

At the heart of the unified message system are a set of servers which are coupled to exchange data and are connected to firewall 112 and the public telephone network.

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Typically, a server represents a computer that processes data for use by other data-consumer devices (such as other servers, computers or any of the communication devices through a proper interface circuit). There is shown a database server 120, which is employed to, among other tasks, organize and maintain the subscriber communication profile database. The subscriber communication profile database itself may reside with database server 120 and represents a data store of subscriber accounts and communication option settings associated therewith. Incoming messages to a particular subscriber or outgoing messages from that subscriber are formatted and routed in accordance with the communication option settings stored in the subscriber communication profile database. Properly authorized changes to the communication option settings will be reflected in the communication option settings stored in the subscriber communication profile database and employed to handle subsequent messages (whether incoming or outgoing).

Subscriber authentication data may be employed to access to a subscriber communication profile database. Subscriber authentication data may be stored in the database server. Subscriber authentication may be accomplished using several techniques. For example, a numeric password, an alphanumeric password, a hidden code wherein the password is randomly hidden in a string (i.e., xxxppppxxx, xppppxxxx, etc.) and biometrics (e.g., retina scans, hand prints, palm prints, finger prints, voice recognition, etc.).

A web server 122 is employed to facilitate interaction between unified messaging system 101 and data-centric network 102. Web server 122 represents one of the system-side servers (i.e., a server that handles the exchange of data with the user's computer via the data-centric network) and is employed, for example, to present to user computer 100 the log-in screen when a subscriber employs user computer 100 to access the unified messaging service. Once that subscriber is properly authenticated (e.g., through a password procedure or another suitable authentication procedure), web server 122 then communicates with database server 120 to obtain the current communication option settings for that subscriber and to display the current communication option settings and an individualized web page to the subscriber for review.

In one preferred embodiment, web server 122 is employed to store all messages pertaining to a particular subscriber. The messages are stored as files in web server 122. These messages may represent, for example, voice files, facsimiles, e-mail messages, voice mail messages, or the like. Pointers in database server 120 facilitate access to the stored messages in web server 122. However, it is contemplated that the messages may be stored in any of the servers discussed herein and/or in a separate storage device accessible by the servers.

An e-mail server 124 is employed to process incoming and outgoing e-mail messages. By way of example, e-mail server 124 may be employed to format/translate the e-mail messages so that they can be properly transmitted to other e-mail systems and understood thereat. For incoming messages, e-mail server 124 may be employed to format/translate the information transmitted via the incoming e-mail and to prepare them for use by other data consumers.

A telephony server 126 is shown coupled between telephone link 128 and the remainder of the unified messaging system and may include any number of sub-servers, such as are shown in FIG. 2. In a manner analogous to web server 122, telephony server 126 represents a system-side server (i.e., a telephony server that handles the exchange of infor-

mation with the user via the telephony-centric network) and is employed to facilitate interaction between unified messaging system **101** and telephony-centric network **129**. Telephony server **126** may be employed to, for example, translate the telephone signals (such as the dialed digits) into a digital format for the purpose of authenticating and allowing subscriber access. Telephony server **126** may also be employed to translate such dialed digits and/or other telephone signals (such as a facsimile tones or verbal commands) into digital data, which may then be employed to facilitate handling of messages and/or the communication option settings. In one embodiment, Dialogic board models D 240 SC-T1, D 480 SC-1, CP-4 /SC, CP-6/SC, and/or CP-12/SC (available from Dialogic Corporation of Parsippany, N.J.) are employed to facilitate the translation between telephone signals and digital data. Once translation is performed, software within telephony server **126** employs the digital data to decide how to handle the message using the communication option settings obtained from the subscriber communication profile database. If the subscriber, through predefined dialing sequences, indicates that he wishes to review and/or modify the communication option settings, software within telephony server **126** operates cooperatively with database server **120** to affect the change to the communication option settings. Once the communication option settings are reflected in the subscriber communication profile database stored in database server **120**, the new communication option settings are consulted each time a message needs to be handled by the unified messaging system.

Telephony-centric network **129** represents any telephone network which couples together telephony-type communication devices (e.g., facsimile machines, pagers, telephones) from geographically dispersed locations. By way of example, telephony-centric network **129** may represent a plain old telephone system (POTS), a wired telephone network popularly known as Public Service Telephone Network (PSTN) or a cellular network or a combination thereof. Telephony-centric network **129** is well known and will not be discussed in great detail here for the sake of brevity.

A telephone **130** is shown coupled to telephony-centric network **129**. In reality, it should be understood that a wide variety of telephony devices (which are not shown to simplify the illustration) are connected to telephony-centric network **129**. Some of these exemplary communication devices are, as mentioned, facsimile machines, pagers, cellular telephone sets, wired telephone sets, and the like.

Telephone link **128** represents the telephone communication channels for transmitting and receiving telephone signals between unified messaging system **101** and telephony-centric network **129**. In a preferred embodiment, telephone link **128** represents high bandwidth T1 telephone links, although other types of telephone links may also be employed. Note that there is no requirement that the data transmitted on telephone link **128** be analog. In fact, with the upcoming convergence of data networks and telephone networks, the telephony information that traverses telephone link **128** may well be digital (in which case, telephony server **116** will be adapted to handle digital telephony signals instead of analog telephony signals). As a noteworthy point, it is expected that as data networks and telephone networks converge, the relevant functionality represented by the servers herein may still apply, albeit with the proper modification to handle an all-digital combined data/telephone network.

FIG. 2 illustrates, in accordance with one embodiment of the present invention, how the 48 telephone lines provided per T1 link may be divided among the sub-servers of

telephony server **126**. As shown in FIG. 2, 45 of the telephone lines may be employed by a main message server **202** to handle the incoming/outgoing voice calls, the incoming voice mail messages, and the incoming facsimiles. Of the 45 telephone lines, 32 may be provisioned for the subscribing or non-subscribing users to dial into the unified messaging system, and the other 13 telephone lines may be employed to allow outgoing calls to be made from within the unified messaging system. The outgoing calls may, for example, be calls destined for the unified messaging system but are rerouted out of the unified messaging system in accordance with a subscriber's communication option setting or they may be originated by the subscriber, who dials into the unified messaging system (using a toll-free access number, for example) and requests an outgoing call be made therefrom to some destination number (for example by punching in the "#" key after authentication, followed by the destination number), thus employing the unified messaging system as a type of calling card service.

One of the 48 telephone lines of the T1 link may be reserved for outgoing facsimile transmission, which is handled by an outgoing facsimile server **204**. Another telephone line may be apportioned for the outgoing paging service, which is handled by an outgoing pager server **206**. Outgoing voice-mail messages are handled by voice mail server **208**, which is coupled to another one of the 48 telephone lines of the T1 link as shown.

To elaborate, outgoing voicemails are voice messages sent to a voicemail phone number which may be created via the web or the telephone. Outgoing voicemails may be new voicemails, replies to other messages or forwarded as a voicemail. For example, when forwarding a voicemail via the web, the voicemail may be treated as an attachment to a speech synthesized text message with the recipient address as a telephone number. Outgoing voicemail servers may be geographically distributed and communicate with each other via internet in such a way that the server nearest the destination voicemail phone number may be assigned to send the voicemail via either a circuit-switched call or packet-switched call.

Outgoing facsimiles are facsimile messages sent to a facsimile telephone number which may be created via the web or the telephone. Outgoing facsimiles may be new facsimiles, replies to other messages, forwarded as a facsimile or call-forwarded as a facsimile in which the system stores the incoming facsimile and then forwards the facsimile to the subscriber's facsimile-forward number. For example, when forwarding a facsimile via the web, the facsimile may be treated as an attachment to Tiff conversion of a text message with the recipient address as a phone number. Like outgoing voicemail servers, outgoing facsimile servers may also be geographically distributed. Outgoing facsimile servers may communicate with each other via internet in such a way that the server nearest to the destination facsimile telephone number may be assigned to send the facsimile via either a circuit-switched call or packet-switched call.

Outgoing pages are paging messages sent to a pager number which may be created via the telephone either by the caller or by the system when sending notification. Like outgoing voicemail servers, outgoing page servers may also be geographically distributed. Outgoing page servers may communicate with each other via the internet in such a way that the server nearest to the destination pager telephone number may be assigned to send the page via either a circuit-switched call or packet-switched call.

There may also be outgoing emails and their servers that do not involve circuit switched calls. Some pagers may be

alphanumeric type and can receive messages as an email. In this case, the outgoing pager server may delegate these requests to the outgoing email servers.

In one embodiment, messages sent to the unified messaging system may be stored in web server **122** with pointers to these messages being held in database server **120**. The above mentioned set of sub-servers (outgoing facsimile server, outgoing pager server and outgoing voice mail server) are arranged to make requests to the database server for outgoing messages stored on the web server. If an outgoing message is detected by a sub-server, software within the sub-servers decides how to handle the outgoing message according to the communication option settings obtained from the subscriber communication profile database. Again, a Dialogic board may be employed, in one embodiment, to facilitate the translation between the stored data and the outgoing telephone signal.

All types of outgoing message requests (voicemail, facsimile, email, pages) are queued in the database server. These requests can also be associated with a delivery time (e.g., the default time is "now"). Each type of request may be stored in a separate queue. An outgoing server of a particular type of message periodically checks its queue from the database server to see if any request's time is up for delivery.

It should be noted that FIG. 2 shows only one exemplary way to divide the T1 telephone lines among the various sub-servers of telephony server **126**. Depending on the traffic pattern generated by subscribing and non-subscribing users of the unified messaging system, these lines and sub-servers may be scaled as necessary.

FIG. 3 illustrates, in accordance with one embodiment of the present invention, the user-interface for an exemplary computer-implemented control center, representing the visual display panel for displaying the communication options pertaining to a particular subscriber on a computer display screen. Through computer-implemented control center **302**, the user may quickly and conveniently review the communication option settings associated with the various services and make changes thereto. That is, the computer-implemented control center **302** serves as the centralized control panel for reviewing and/or customizing the communication options associated with the various communication services. FIG. 4 illustrates aspects of computer-implemented control center **302** in greater detail.

In the exemplary implementation of FIG. 3, six representative communication options are shown. The call forwarding service **304**, if it is enabled, allows incoming calls through telephony-centric network **129** to be routed to a provided forwarding number **306**. The call forwarding option setting may also be seen in the detailed computer-implemented control center view of FIG. 4, which shows the communication options in greater detail.

To accomplish the forwarding, telephony server **126** consults, after a call is made to a subscriber's telephone number, the subscriber communication profile database in database server **120**. If the call forwarding option is enabled, that call is then forwarded to the forwarding number specified by telephony server **126** via an outgoing telephone line. If the forwarding number does not pick up, the call may be rerouted, for example, to the subscriber's voice mail box. If the call forwarding option is not enabled and the caller does not choose other methods discussed below to try to contact the subscriber, the call may then be forwarded to the subscriber's voice mail box as well.

The "follow me" service **308** gives the subscriber the ability to designate a set of telephone numbers where he may

likely be found and gives the caller the option to try to find the subscriber (or someone who may appropriately handle the incoming call) at those numbers. By way of example, during a work day, a given subscriber may be contacted either at his main office telephone, his secondary office telephone, or his cellular telephone in his car. On the weekend, that same subscriber may be found at home or at a cellular telephone in his boat. The office/car set of telephone numbers may be designated a primary set **310** and the home/boat set of telephone numbers may be designated a second set. FIG. 4 shows the communication options associated with the follow me service in greater detail.

On a week day, the subscriber may enable the follow me service option and select primary set **310** as the set of telephone numbers where he may likely be found. On the weekend, the subscriber may enable the follow me service option and select the secondary set, for example. From the caller's perspective, the follow me service is preferably an on-demand service. That is, the caller is preferably given the option to decide whether to employ the follow me service by pressing a predefined key in response to instructions or to simply allow the call to be passed to voice mail if unanswered.

If the follow me service is enabled by the subscriber and chosen by the caller, telephony server **126** will try to place outgoing calls to the numbers designated in the selected set starting with the first number in the set. To ensure that the call is not inadvertently completed vis-a-vis by a bystander who happens to be near the destination telephone and picks up the telephone when it rings, telephony server **126** may allow the caller to record his name. Telephony server **126** then announces the name to the person picking up the destination telephone prior to giving that person a choice of whether to accept the call. If the person who picks up the call is indeed the person for whom the call is intended, the entry of a predefined key press (on instructions by telephony server **126**) on the destination telephone keypad will allow telephony server **126** to complete the end-to-end connection. In this manner, the follow me service may be employed as a call screening mechanism if desired. Telephony server **126** may try all the numbers in the set in sequence until the subscriber is found. If not, the call may be allowed to pass into the subscriber's voice mail box.

In one embodiment, the follow-me service may not always use the same sequence to callout a subscriber when the subscriber has set up several numbers as his possible locations (e.g., weekday routine or weekend and evening routine). The follow-me service may use the number where the subscriber is last located (stored in memory) as the first number to dial in the sequence provided the time for the last location happened within a certain interval (e.g., an hour).

An alternate number service **312** gives the subscriber the ability to designate a telephone number as an alternate number where the caller can attempt to locate the subscriber (or someone who may appropriately handle the incoming call) at a number designated in advance (**314**). FIG. 4 shows the communication options associated with the alternate number service in greater detail. The alternate number option is similar to call forwarding with the exception that the alternate number option is an on-demand service. That is, the caller is preferably given the option to decide whether to employ the alternate number service by pressing a predefined key in response to instructions or to simply allow the call to be passed to voice-mail if unanswered. In all other respects, the alternate number service may function in the same way as the call forwarding service. An alternate number may also be used to set a personal operator number (e.g., your secretary).

A message alert option **316** gives the subscriber the ability to select whether to be alerted when a message is received. The message that triggers the alert may be specified using any number of filtering criteria stored as part of the subscriber communication option settings. In the example of FIG. **3**, the filtering criteria is "urgent" (**318**) although any type of filtering may be applied. For example, the filtering criteria could be the message's sender, subject or content. The sender could be identified by his email address or phone number (e.g., caller ID).

FIG. **4** shows, in one embodiment, the communication option settings associated with the unified messaging service in greater detail. With respect to the message alert service, the alerting itself may be accomplished using any of the communication devices controlled by the unified messaging system (e.g., pager, telephone at a designated number, voice mail in a designated voice mail box, facsimile at a designated facsimile number, e-mail at a designated e-mail address, and the like). In accordance with one particularly advantageous embodiment, the message alert is sent to a pager via outgoing pager sub-server **206** since it is the device most likely to be near the subscriber. In one embodiment, the server that sends the alert (e.g., the web server if the incoming message is an e-mail, the telephony server if the incoming message is a facsimile or telephone call) may send out a predefined alphanumeric code that identifies the type of incoming message. The alphanumeric code itself may be predefined either by the unified messaging system or by the subscriber if customization is desired. Preferably, the alert is sent to the subscriber's own number to alert the subscriber that an incoming message fitting the filtering criteria has been received at the unified messaging system.

A facsimile receiving service **319** allows the user to receive facsimile at the unified messaging system if someone sends a facsimile to the subscriber's telephone number. FIG. **4** shows the communication options associated with the facsimile receiving service in greater detail. If the facsimile receiving option is enabled, telephony server **126** will monitor for the facsimile tone and process the incoming message as a facsimile if the facsimile tone is detected. In one embodiment, the incoming facsimile is stored as a GIF or TIFF file that may be viewed by the subscriber through a web page by clicking on facsimile mail link **320**. If the facsimile forward option **406** is also enabled, the facsimile will also be forwarded by the outgoing facsimile server **204** to another facsimile machine at specified facsimile number **408**, additionally or alternatively to storing a copy of the received facsimile at the unified messaging service. If the facsimile option is not enabled but the call forwarding option is enabled, the call is forwarded on and may be picked up by the forwarded device (if it is a functioning facsimile machine). If not, the incoming facsimile will not be received.

A paging service **321** allows a message sent to the subscriber to be rerouted to a pager designated by the subscriber. Paging service **321** is preferably an on-demand service and allows the caller, if desired, to send a short message to a pager designated by the subscriber. The pager number designated by the subscriber may be designated at location **404a** (the paging service number) and, if required, using location **404b** (the PIN number for the pager). If the paging service is enabled, a caller to the subscriber's telephone number will be given an option to send a short message to the pager subscriber pager (for example, by pressing a predefined key to send the short message). As noted before, the caller may also choose any of the other services follow me service **308** and/or alternate number **312**

if enabled. In this manner, a single telephone number may serve as the access point to receive a page, a voice message, a facsimile, etc.

For alphanumeric pagers with an email address, the outgoing page server may use text to describe the alert message (e.g., "you have a urgent voicemail from caller ID 4152222222 with return number 4153333333") instead of codes as in the case of numeric pagers. The outgoing pager server can then delegate the alert messages to the outgoing email server.

Voice mail messages that are stored may be listened to using either the computer (through an appropriate software/sound card) by clicking on voice mail link **330** (FIG. **3**) or a telephone coupled to the telephony-centric network. E-mails that are sent to the subscriber using the subscriber's e-mail address may be read on-line by, for example, clicking on e-mail link **332** (FIG. **3**). In one embodiment, telephone server **126** may be equipped with a text-to-speech facility to allow the subscriber to listen to the content of the e-mail message through a telephone. FIG. **3** also shows an outgoing e-mail link **334**, which links the subscriber to an e-mail application program to allow the subscriber to compose and send out e-mail messages. In the case of replying an email via phone, a voice recording may be taken and sent as an email attachment.

As can be appreciated from the above examples, computer-implemented control center **302** provides a central visual interface that allows a subscriber to efficiently review and/or modify the communication option settings associated with the various communication services offered. This is in sharp contrast with time-consuming and burdensome prior art approaches whereby the person is required to contact different entities and deal with different accounts to change the communication options associated with different communication services.

In one embodiment, the computer-implemented control center has two views:

the minimized view and the full view. In the minimized view (e.g., FIG. **3** in one embodiment), the computer-implemented control center may simply show the simplified routing details and the on-off settings associated with the communication options. Although the user may make changes to the on-off settings, fuller edit capabilities are preferably provided in the full view. In the full view (e.g., FIG. **4** in one embodiment), the computer-implemented control center additionally add explanations and detailed routing choices. If desired, an authentication procedure may be implemented with either the minimized view or the full view to ensure that the person making editing changes to the communication options is properly authorized.

It should be appreciated that the communication services and options discussed in connection with FIGS. **3** and **4** are only illustrative of the capabilities of the inventive computer-implemented control center. It should be apparent to those skilled in the art that the same control panel may be presented to the subscriber through the telephony server and the telephone interface if the subscriber wishes to review and/or change the communication options using a telephone connected to the telephony-centric network. The communication options may be presented in a sound format and the subscriber may be offered an option menu to review and/or change any communication option setting. Further, it should also be apparent to those skilled in the art that communication services options other than the preferred and discussed communication services and options can readily be controlled by the inventive computer-implemented control cen-

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ter. Irrespective of the services and options involved, a subscriber can access the centralized computer-implemented control center through either a computer connected to the data-centric network or a telephone connected to the telephony-centric network to review and/or change the communication options.

FIG. 5 is a flow diagram depicting, in one embodiment, the relevant steps of a computer-implemented process for handling access to the unified messaging system through the telephony-centric network by a subscribing or a non-subscribing caller. The subscriber may wish to access the unified messaging system to, for example, listen to stored voice mail messages or e-mail messages, to use the unified messaging system as a calling card service, or to review and/or modify the communication options. A non-subscribing caller may access the unified messaging system to, for example, send a facsimile, a page, or to call the subscriber. The first step 502 involves accessing the unified message system through a telephone using the subscriber's assigned telephone number. A set of two numbers may be assigned to a user, a local telephone number and a toll-free telephone number, both of which may be associated with a single user account.

The dialed digits reaches telephony server 126 via telephone link 128. Telephony server 126 then obtains the DNIS (direct number information service) by digitizing the dialed digits (step 504) and employs the dialed digits to obtain the communication option settings associated with the account represented by the dialed telephone number (step 506). As mentioned earlier, these communication option settings reside in the subscriber communication profile database, which may be managed by database server 120, in one embodiment. During this time, telephone server 126, through an appropriate interface board such as the aforementioned Dialogic board, monitors the incoming line for a facsimile tone or telephone key digit tone.

If no such facsimile tone or telephone key digit tone is detected (step 508), the call is assumed to be a normal call to the subscriber and will be handled (in steps 510 and 512) in accordance with the communication option settings in the manner discussed earlier (e.g., forwarded if call forwarding is on, routed to an alternate number if the caller selects that option and alternate service is enabled, and the like).

On the other hand, if a facsimile tone is detected by telephony server 126, the call will be handled as an incoming facsimile in accordance with the communication option settings (step 514). By way of example, if the facsimile receiving service is enabled, a copy of the facsimile will be stored for later retrieval by the subscriber. If the facsimile forwarding option is enabled, a copy of the facsimile is alternatively or additionally sent to the forwarded facsimile number.

On the other hand, if a keyed digit tone is detected by telephony server 126, software within telephony server will handle the options chosen by the caller (step 516). By way of example, one option may represent the subscriber wishing to access the computer-implemented control center (via an appropriate key press) to review and/or change the communication options. In this case, telephony server 126 preferably serves up the account statistics, e.g., how many voice mail messages, facsimiles, e-mail messages, etc. are waiting and asks the caller for authentication as a subscriber. If there are none, the subscriber may wish to quickly hang up and not go through the authentication procedure (and extending the cost of the call). This, however, is an option and may be eliminated if privacy is a concern (that is, authentication may take place before the presentation of account statistics).

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Telephony server 126 may then obtain the authentication data from the caller (e.g., the password) and compare it with the subscriber account authentication data, which it obtains from the subscriber communication profile database in the database server. Authentication may be done via keyed digit entry or, in one embodiment, by voice commands, which may then be translated to keyed digits by appropriate software. If authenticated, the subscriber may then be presented with a menu that allows the subscriber to review and/or change the communication options via key press or voice commands. Once the subscriber saves the changes, the changed communication option settings will be employed to handle future messages transmitted and/or received through either the telephony-centric network or the data-centric network.

As one of the options, the subscriber may be given a choice (with proper authentication) to use the unified messaging system to originate an outgoing call. The choice may be made via, for example, a predefined key press or voice command. This is useful in situations wherein the subscriber accesses his account at the unified messaging system through his toll-free number (e.g., from the airport or from someone else's telephone) and instructs the telephony server to connect his incoming call to an outgoing call to a provided destination telephone number and charges the cost to his account. In this manner, the unified messaging system may be employed as a convenient calling card.

A keyed digit may also represent an on-demand service selection chosen by the caller. In this case, the caller simply presses an appropriate key when prompted and employs one of the on-demand services is then employed to handle his call. Various on-demand services have been discussed in connection with FIGS. 3 and 4 and will not be repeated here for the sake of brevity.

FIG. 6 is a flow diagram depicting, in one embodiment, the relevant steps of a computer implemented process for handling access to the unified messaging system by a subscriber through a data-centric network (such as the Internet in the example of FIG. 6). The subscriber may wish to access the unified messaging system to, for example, listen to stored voice mail messages, view stored e-mail messages or facsimiles, send e-mail messages or facsimiles, or to review and/or modify the communication options. The first step 602 involves accessing the unified messaging system web site, using a unified messaging system web address (e.g., "unifiedmessagingssystem.com"), with user computer 100 through a data-centric network 102.

The web site request connects to the web server 122 via data link 104 and network interface system 105. Following connection to the web site, the unified messaging system web server 122 serves up a login page using, for example, ASP-active server pages (step 604). The next step (step 606) includes entering authentication data such as a subscriber identifier (ID), e.g., username and password, at the login page. The web server 122, after obtaining the authentication data, compares it with the subscriber account authentication data (step 608), which it obtains from the subscriber communication profile database from the database server. If authenticated, the subscriber may then be presented with a graphical menu of the communication options (step 610) that allows the subscriber to retrieve his email/voicemail/fax messages, or review and/or modify the communication options via user computer 100 (step 612). Once the subscriber saves the changes (step 614), the modified communication option settings will be employed to handle future messages transmitted and/or received through either the telephony-centric network or the data-centric network.

Accordingly, the present invention provides a single centralized facility that gives a subscriber of various communication services (e.g., telephone, facsimile, pager, e-mail) the ability to review and modify his communication options (e.g., call forwarding, follow me service, alternate number, message alert, facsimile receiving, paging, routings and the like). This review and modification is done in an interactive and simplified manner, via either the data-centric network or the telephony-centric network.

The unified messaging system benefits a subscriber by integrating various communication services which up to now have existed as separate services. This is in sharp contrast to the prior art where the dual existence of the data-centric network and the telephony-centric network has forced the service providers to manage communication options as separate accounts.

This integration simplifies management, billing, and more importantly the routing of messages among the various services. The unified messaging system gives the subscriber more control with regards to how the world communicates to the subscriber. For example, a subscriber may specify that an incoming facsimile be forwarded to a computer for viewing or to a printer for printing, listen to e-mail messages through a telephone, receive pager notification when a facsimile is received, etc. The unified messaging system allows messages to be received, stored, retrieved, and/or forwarded without regard to the communication devices and/or networks employed for the transmission of the messages. In fact, the unified messaging system even gives non-subscribers choices with its on-demand services associated with some of the communication options.

The unified messaging system advantageously removes the burden of managing different physical devices and different accounts. The subscriber no longer has to access multiple accounts to modify options. As mentioned previously, a person who travels may wish to forward calls made from his home and office telephone numbers to his cellular telephone or hotel telephone. Likewise, he may wish to divert facsimiles sent to an office facsimile machine to a facsimile machine that is more local. While in a meeting, however, one may wish to temporarily divert the voice calls to a voice mail box or forwards it to another person for handling. To stay in touch, these communication options may need to be changed many times during the course of the day and/or each time one arrives at a new location.

Using the present invention, a person need only access the unified messaging system either with a telephone or a computer. The communication options may then be modified as needed with a few key strokes. The subscriber has the ability to review communication options at a single facility and no longer has to recall communication options from memory or contact each service provider.

Furthermore, the present invention advantageously allows remote access to the unified messaging system from any location that is connected to the data-centric network or the telephony-centric network. The subscriber no longer has to be physically present at the forwarding origin to modify the forwarding option. This advantage leads to yet another advantage in that the unified messaging system may be used as a calling card. The subscriber if located at the airport, for example, contacts his unified messaging system toll-free telephone number. The system then allows the subscriber the option of rerouting this call to another location.

Also, the present invention advantageously allows the subscriber the convenience of one telephone number (or two, including a toll-free 800 number). Multiple number

confusion is avoided by connecting multiple numbers through the one number of the unified messaging system.

While this invention has been described in terms of several preferred embodiments, there are alterations, permutations, and equivalents which fall within the scope of this invention. It should also be noted that there are many alternative ways of implementing the methods and apparatuses of the present invention. It is therefore intended that the following appended claims be interpreted as including all such alterations, permutations, and equivalents as fall within the true spirit and scope of the present invention.

What is claimed is:

1. A computer-implemented method for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to said plurality of communication services, said communication options include parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services, said plurality of communication services comprising a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network, said communication options being accessible via display terminals coupled to said data-centric network and via telephones coupled to said telephony-centric network, said method comprising:

providing a subscriber communication profile database, said subscriber communication profile database having therein an account pertaining to said subscriber, said account including said communication options for said subscriber;

generating a single graphical menu for displaying said communication options for each of said communication services at the same time, wherein said single graphical menu comprises at least a first display area for showing a first communication service and a first communication option associated with said first communication service, and a second display area for showing a second communication service and a second communication option associated with said second communication service, the first display area and the second display area being displayed at the same time in said single graphical menu, and wherein the first communication option included a first enable option for enabling or disabling the first communication service, and wherein the second communication option includes a second enable option for enabling or disabling the second communication service;

visually displaying said single graphical menu on one of said display terminals, using a computer server coupled to exchange data with said subscriber communication profile database, when said subscriber employs said one of said display terminals to access said computer-implemented control center;

providing a telephony server coupled to exchange data with said communication profile database;

audibly representing said communication options to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center;

receiving from said subscriber via said one of said display terminals at said computer server a first change to at least one of said communication options, said first change to said communication options pertains to either said voice telephone service or said e-mail service; and updating said first change to said account in said subscriber communication profile database, thereby result-

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ing in a first updated subscriber communication profile database, wherein subsequent messages to said subscriber at said unified messaging system, including said voice telephone service, are handled in accordance with said first updated subscriber communication profile database.

2. The computer-implemented method of claim 1 further comprising:

receiving at said telephony server from said subscriber via said one of said telephones a second change to at least one of said communication options; and

updating said second change to said account in said subscriber communication profile database, thereby resulting in a second updated subscriber communication profile database, wherein subsequent messages to said subscriber at said unified messaging system, including said e-mail service are handled in accordance with said updated subscriber communication profile database.

3. The computer-implemented method of claim 2 wherein said facsimile and said voice telephone service are both implemented using a single telephone number.

4. The computer-implemented method of claim 1 wherein said plurality of communication set-vices include a facsimile service configured to permit said subscriber to receive at said unified messaging system a facsimile through said telephony-centric network and said telephony server, said communication options including a facsimile receiving enable option associated with said facsimile service.

5. The computer-implemented method of claim 1 further comprising:

providing a pager server coupled to exchange data with said communication profile database, wherein said communication services further include a pager alert service and wherein said communication options further include a pager alert option, said pager server being configured to transmit, when said pager alert option is enabled, an alert to a pager through said telephony-centric network if an e-mail message is received by said subscriber through said data-centric network, said pager having a page number that is also specified as part of said pager alert option.

6. The computer-implemented method of claim 1 wherein said plurality of communication services include a call forwarding service configured to permit said subscriber to specify whether a call received at a telephone number associated with said account be forwarded to a forwarding telephone number, said communication options including a call forwarding enable option and said forwarding telephone number.

7. The computer-implemented method of claim 1 wherein said plurality of communication services include an alternate number service, said communication options including an alternate number service enable option associated with said alternate number service and an alternate telephone number, said alternate number service enable option, when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call by said caller to an alternate telephone associated with said alternate telephone number.

8. The computer-implemented method of claim 1 wherein said plurality of communication services include a follow-me service, said communication options including a follow-me service enable option associated with said follow-me service and a set of telephone numbers, said follow-me service enable option when enabled by said subscriber, permits a caller to said subscriber at said unified messaging

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system to elect to forward a call by said caller to a telephone associated with said set of telephone numbers.

9. The computer-implemented method of claim 8 wherein said follow-me service is configured to ring in sequence each one of said telephones associated with said set of telephone numbers until said call by said caller is accepted.

10. The computer-implemented method of claim 9 wherein said follow-me service is configured to ring first a last-found telephone number, said last-found telephone number representing a telephone number associated with a phone previously employed by said subscriber to answer an immediately preceding call to said subscriber.

11. The computer-implemented method of claim 8 wherein said single graphical menu comprises at least:

a first display area for showing said on-demand communication service, said on-demand communication enable option, and said forwarding number.

12. The computer-implemented method of claim 11 wherein said single graphical menu further comprises:

a second display area for showing a second communication service, and a second communication option associated with said second communication service, the first display area and the second display area being displayed at the same time in said single graphical menu.

13. The computer-implemented method of claim 12 wherein said on-demand communication service is selected from a follow-me service, an alternate number service, and a paging service, and wherein said second communication service is selected from a call forwarding service, a follow-me service, an alternate number service, a message alert service, a fax receiving service, and a paging service.

14. The computer-implemented method of claim 12 wherein the second communication option includes a second enable option for enabling or disabling the second communication service.

15. The computer-implemented method of claim 14 wherein the second communication option includes a routing option.

16. The computer-implemented method of claim 15 wherein the forwarding number includes a plurality of numbers, and wherein the second routing option includes a plurality of routings.

17. A data structure for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to said plurality of communication services, said communication options include parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services, said plurality of communication services comprising a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network, said communication options being accessible via display terminals coupled to said data-centric network and via telephones coupled to said telephony-centric network, said data structure for use with:

a subscriber communication profile database, said subscriber communication profile database having therein an account pertaining to said subscriber, said account including said communication options for said subscriber; said data structure comprising:

a single graphical menu for displaying said communication options for each of said communication services at the name time, wherein said single graphical menu comprises at least a first display area for showing a first communication service and a first

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communication option associated with said first communication service, and a second display area for showing a second communication service and a second communication option associated with said second communication service, the first display area and the second display area being displayed at the same time in said single graphical menu, and wherein the first communication option includes a first enable option for enabling or disabling the first communication service, and wherein the second communication option includes a second enable option for enabling or disabling the second communication service;

said single graphical menu capable of being displayed on one of said display terminals using a computer server coupled to exchange data with said subscriber communication profile database, when said subscriber employs said one of said display terminals to access said computer-implemented control center;

wherein a telephony server is coupled to exchange data with said communication profile database;

an audible representation of said communication options capable of being provided to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center;

a first change to at least one of said communication options received from said subscriber via said one of said display terminals at said computer server, said first change to said communication options pertaining to either said voice telephone service or said e-mail service;

wherein said first change is updated to said account in said subscriber communication profile database, thereby resulting in a first updated subscriber communication profile database, and wherein subsequent messages to said subscriber at said unified messaging system, including said voice telephone service, are handled in accordance with said first updated subscriber communication profile database.

18. A computer readable media including instructions for a computer-implemented method for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to said plurality of communication services, said communication options include parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services, said plurality of communication services comprising a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network, said communication options being accessible via display terminals coupled to said data-centric network and

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via telephones coupled to said telephony-centric network, said instructions comprising;

providing a subscriber communication profile database, said subscriber communication profile database having therein an account pertaining to said subscriber, said account including said communication options for said subscriber;

generating a single graphical menu for displaying said communication options for each of said communication services at the same time, wherein said single graphical menu comprises at least a first display area for showing a first communication service and a first communication option associated with said first communication service, and a second display area for showing a second communication service and a second communication option associated with said second communication service, the first display area and the second display area being displayed at the same time in said single graphical menu, and wherein the first communication option includes a first enable option for enabling or disabling the first communication service, and wherein the second communication option includes a second enable option for enabling or disabling the second communication service;

visually displaying said single graphical menu on one of said display terminals, using a computer server coupled to exchange data with said subscriber communication profile database, when said subscriber employs said one of said display terminals to access said computer-implemented control center;

providing a telephony server coupled to exchange data with said communication profile database;

audibly representing said communication options to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center;

receiving from said subscriber via said one of said display terminals at said computer server a first change to at least one of said communication options, said first change to said communication options pertaining to either said voice telephone service or said e-mail service; and

updating said first change to said account in said subscriber communication profile database, thereby resulting in a first updated subscriber communication profile database, wherein subsequent messages to said subscriber at said unified messaging system, including said voice telephone service, are handled in accordance with said first updated subscriber communication profile database.

* * * * *

Exhibit 6

HENRY HYDE-THOMSON August 28, 2007
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Page 1

1 UNITED STATES INTERNATIONAL TRADE COMMISSION

2 Washington, D.C.

3 Before the Honorable Paul J. Luckern

4 Administrative Law Judge

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6 In the Matter of:)

7 CERTAIN UNIFIED COMMUNICATION)

8 SYSTEMS, PRODUCTS USED WITH) Inv. No.

9 SUCH SYSTEMS, AND COMPONENTS) 337-TA-598

10 THEREOF) CONFIDENTIAL

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14 Videotaped Deposition of

15 HENRY HYDE-THOMSON

16 Washington, D.C.

17 Tuesday, August 28, 2007

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23 Job No.: 22-110439

24 Pages 1 - 255

25 Reported By: Joan V. Cain

HENRY HYDE-THOMSON August 28, 2007
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Videotaped Deposition of HENRY HYDE-THOMSON,
held at the law offices of:

LATHAM & WATKINS, LLP
Suite 1000
555 Eleventh Street, Northwest
Washington, D.C. 20004-1304
(202) 637-2200

Pursuant to Notice, before Joan V. Cain,
Certified Court Reporter and Notary Public in and for
the District of Columbia.

HENRY HYDE-THOMSON August 28, 2007
CONFIDENTIAL

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A P P E A R A N C E S

ON BEHALF OF COMPLAINANT:

AHMED J. DAVIS, ESQUIRE

RAMA G. ELLURU, ESQUIRE

FISH & RICHARDSON, P.C.

Suite 1100

1425 K Street, Northwest

Washington, D.C. 20005

Telephone: (202) 783-5070

ON BEHALF OF RESPONDENT:

DAVID M. FARNUM, ESQUIRE

LATHAM & WATKINS, LLP

Suite 1000

555 Eleventh Street, Northwest

Washington, D.C. 20004-1304

Telephone: (202) 637-2200

HENRY HYDE-THOMSON August 28, 2007
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A P P E A R A N C E S C O N T I N U E D

ON BEHALF OF THE UNITED STATES INTERNATIONAL TRADE
COMMISSION:

DAVID O. LLOYD, ESQUIRE

UNITED STATES INTERNATIONAL TRADE COMMISSION

OFFICE OF UNFAIR IMPORT INVESTIGATION

500 E Street, Southwest

Washington, D.C. 20436

Telephone: (202) 205-2576

ALSO PRESENT:

Scott Pickering, Videographer

HENRY HYDE-THOMSON August 28, 2007
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1 based on certain rules specified by users that depend
2 upon users' activities on a computer network.

3 Q What is your understanding of the
4 term "computer network," as that term is used in the
5 Liffick patents?

6 A Again, I refer to the -- to terms that we
7 defined in, you know, my opinion and understanding of
8 the terms. In my second report we --

9 Q Exhibit HT 2A --

10 A Yeah.

11 Q -- your rebuttal report? Okay.

12 A So a computer network is a network linking
13 computers. A telephone network is a network linking
14 telephones, and I think we agree with the construction
15 proposed by Mr. Chang that a definition of a telephone
16 network is a network that deals with telephony
17 information, and by telephony information I would in
18 particular include realtime voice or voice data
19 generally, and fax as well because that's used over
20 voice circuits, and data to set up and distribute
21 calls. A computer network is a network of computers
22 more typically nowadays based on IP protocols,
23 internet protocol, but that wasn't always the case.

24 Q When did that become the case, in your
25 understanding?

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1 A Well, in the '80s there were alternative
2 networking protocols. IBM had one called token ring,
3 and I guess during the '90s IP became fairly pervasive
4 and replaced token ring. Certainly in the time we're
5 talking about, IP was pervasive, and it's difficult to
6 imagine a computer network that wasn't based on IP.

7 Q Any other protocols?

8 A Other protocols?

9 Q Yes. I mean, you just identified the IBM
10 token ring protocol, and you said it was supplanted in
11 the '90s?

12 A Yeah.

13 Q Anything else?

14 A Well, there are other proprietary protocols.
15 I mean, mainframes had protocols for communicating
16 with terminals to mainframes, V32 and V22 and various
17 different things.

18 Q Are there -- are the protocols that you're
19 referring to protocols that are strictly used on a
20 computer network?

21 A Low-level protocols can be used for all
22 sorts of different things. At a higher level, you
23 have application level protocols which define, you
24 know, more precisely what is actually the nature of
25 the packets that are being carried over the networks,

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1 employees, so I don't actually know how this works.

2 But when I activate MySoftPhone, the computer is
3 running a program to do that, isn't it?

4 A Mm-hmm.

5 Q I'm afraid I need a yes or a no answer.

6 A Yes, it is.

7 Q So from a system point of view, what is the
8 difference between a computer running a soft phone
9 program and a computer running a virus scan program?

10 A Because the soft phone program is dealing
11 with telephony data. It's transmitting voice data and
12 setting up calls and so on. So it's a client service
13 system and it communicates with a PBX or a telephony
14 system for routing calls and that's the definition of
15 a telephone network.

16 Q From my computer's point of view, in terms
17 of -- let's strike that and try again.

18 Now, if I understand what you -- your
19 testimony of a moment ago was basically that the
20 result of the program that I'm running, the voice soft
21 phone program is that computer telephony information
22 is sent to wherever it's supposed to go.

23 A Yes.

24 Q From my computer's point of view in terms of
25 the fact that it's running a program, is there any

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1 difference? I mean, does my computer know that it's
2 sending voice information as opposed to running a
3 virus scan as opposed to doing the other hundred
4 things my computer does?

5 MR. FARNUM: Objection, vague.

6 THE WITNESS: Well, your computer doesn't
7 know nothing. It's -- you know, what -- it's us,
8 human beings, who are interpreting what these things
9 are, and what the definition of a computer network is
10 and what the definition of a telephone network is, is
11 something which, you know, we've been discussing here,
12 but I think we have all agreed that the definition of
13 a telephone network is the handling of realtime voice
14 and setting up calls, and that's what the software
15 does, and the fact that it does it on a computer
16 rather than on a handset that's dedicated to the
17 single function of doing that is still telephony.

18 BY MR. LLOYD:

19 Q Okay. From a -- then let's look at it from
20 a system point of view and let's set up my
21 hypothetical system so that essentially my system
22 detects when I'm running a program on my computer.

23 A Mm-hmm.

24 Q And let's say that in my hypothetical system
25 that's my call routing criteria. When my program is

Exhibit 7

CONFIDENTIAL BUSINESS INFORMATION

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

MICROSOFT CORPORATION,

Plaintiff/Counterclaim Defendant,

v.

Civil Action No. 07-90-SLR

ALCATEL LUCENT ENTERPRISE
and
GENESYS TELECOMMUNICATIONS
LABORATORIES, INC.,

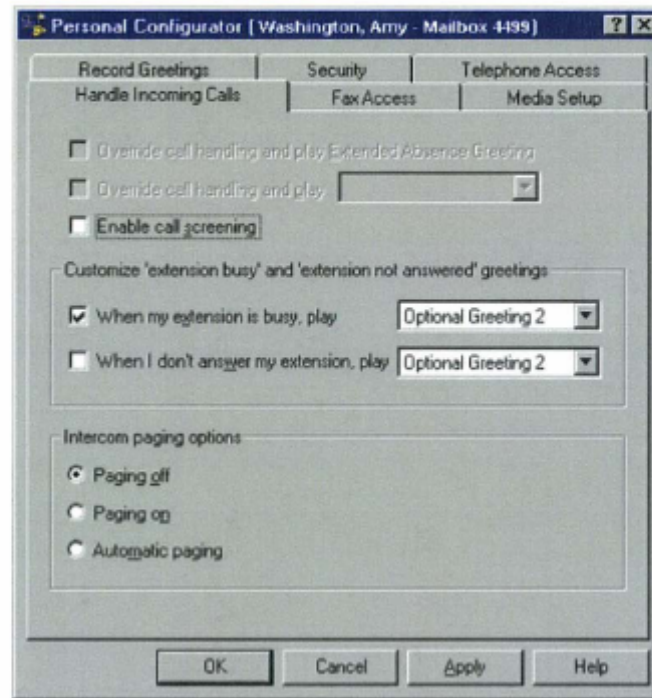
Defendants/Counterclaim Plaintiffs.

**EXPERT REPORT OF HENRY HYDE-THOMSON REGARDING
ALCATEL LUCENT ENTERPRISE'S NON-INFRINGEMENT OF
U.S. PATENT NOS. 6,263,064, 6,728,357, 6,430,289 AND 6,421,439
IN REBUTTAL TO THE EXPERT REPORT OF DR. WILLIAM H BECKMANN**

Dated: April 18, 2008

2-28 Octel Unified Messenger Subscriber's Reference Guide

Figure 3-9 Handle Incoming Calls tab



(Octel Unified Messenger Subscriber's Reference Guide, AVAYA 597-807, at 2-28).

B. Computer Telephony Integration

11. Computer Telephony Integration (CTI) first arose around 1990, and had become widespread by the end of the decade. For instance, the book "The UnPBX" describes various CTI environments, including stand-alone voicemail systems, IVR systems, call centers, unified messaging systems, and PBXs. (Edwin K. Magulies, *The UnPBX: The Complete Guide to the New Breed of Communication Servers*, 1997, ALE 214-733, at B:29-31)

12. A related technology that matured at the same time as CTI was Voice over IP (VoIP). VoIP refers generally to the transmission of voice in small packets between various points on a telephone or a computer network, such as between computers connected to the Internet, or between IP telephones.

CONFIDENTIAL BUSINESS INFORMATION

I declare, under penalty of perjury that the foregoing is true and correct as to the facts as stated and my opinions as expressed.

Dated: April 18, 2008



Henry Hyde-Thomson

Exhibit 8

Page 1155

BEFORE THE

UNITED STATES INTERNATIONAL TRADE COMMISSION

_____)

In the Matter of:) Investigation No.

CERTAIN UNIFIED COMMUNICATIONS) 337-TA-598

SYSTEMS, PRODUCTS USED WITH)

SUCH SYSTEMS, AND COMPONENTS)

THEREOF)

_____)

Hearing Room A

United States

International Trade Commission

500 E Street, Southwest

Washington, D.C.

Friday, October 12, 2007

VOLUME 4

The parties met, pursuant to the notice of the Judge, at 8:30 a.m.

BEFORE: THE HONORABLE PAUL J. LUCKERN

1 APPEARANCES:

2
3 FOR COMPLAINANT MICROSOFT CORPORATION:

4 RUFFIN B. CORDELL, ESQ.

5 JOSEPH V. COLAIANNI, ESQ.

6 LINDA L. KORDZIEL, ESQ.

7 JEFFREY R. WHIELDON, ESQ.

8 RAMA ELLURU, ESQ.

9 JOSHUA POND, ESQ.

10 Fish & Richardson, P.C.

11 1425 K Street, N.W., Suite 1000

12 Washington, D.C. 20005

13 (202) 783-5070

14

15

16

17

18

19

20

21

22

23

24

25

1 APPEARANCES (Continued:)

2
3 FOR RESPONDENT ALCATEL BUSINESS SYSTEMS:

4 DAVID A. NELSON, ESQ.

5 DAVID S. FOSTER, ESQ.

6 SASHA D. MAYERGOYZ, ESQ.

7 Latham & Watkins, LLP

8 233 South Wacker Drive, Suite 5800

9 Chicago, Illinois 60606-6306

10 (312) 876-7716

11
12 STEVEN C. CHERNY, ESQ.

13 Latham & Watkins, LLP

14 885 Third Avenue, Suite 1000

15 New York, New York 10022-4834

16 (212) 906 1345

17
18 ON BEHALF OF THE ITC STAFF:

19 DAVID O. LLOYD, ESQ.

20 ANNE M. GOALWIN, ESQ.

21 U.S. International Trade Commission

22 Office of Unfair Import Investigations

23 500 E Street, S.W.

24 Washington, DC 20436

25 (202) 205-2746

1 APPEARANCES: (Continued)

2
3 ATTORNEY-ADVISOR:

4 ROBERT A. HALL, ESQ.

5 U.S. International Trade Commission

6 500 E Street, S.W.

7 Washington, DC 20436

8 (202) 205-2699

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12 *** Index appears at end of transcript ***
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1 A Yes.

2 Q And do you see the word "said" here,
3 sir, in line 3 of the excerpt on page 6 of RDX-1?
4 And that would be the second occurrence of "said",
5 said communication services.

6 A Yes.

7 Q And you told the Judge earlier that
8 "said" is an adjective that means you look back to
9 the previous occurrence of that word, correct?

10 A Correct.

11 Q So if we want to figure out which
12 communication services must be included within the
13 single graphical menu, we need to go back and look
14 and see where these communication services were
15 first recited in the claim; isn't that right?

16 A Yes.

17 Q That's the way the whole process works.
18 We patent lawyers, when we say said something, we
19 want you to go back and find it, correct?

20 A Correct.

21 Q Are you familiar with the phrase
22 "antecedent basis"?

23 A I am now.

24 Q Well, that's what it is. See, you could
25 be a patent lawyer.

1 So we're tasked with going back upwards
2 into the claim and looking for the first
3 occurrence of communication services. And that's
4 going to tell us whether it has to be one
5 communication service, seven communication
6 services, or all of them, correct?

7 A Correct.

8 Q So let's do that. Let's go back to
9 page 5 where we have the full version of it. And
10 it's a little bit difficult to see, but I have the
11 paper copy. I think you do, too. The claim
12 begins: A computer implemented control center for
13 permitting a subscriber of a plurality of
14 communication services of a unified messaging
15 system.

16 Do you see that, sir?

17 A Yes.

18 Q A plurality of communication services.
19 You see that?

20 A Yes.

21 Q And speaking in the Queen's English, you
22 know that a plurality means more than one,
23 correct?

24 A Correct.

25 Q Does it mean seven?

1 A Nope.

2 Q Does it mean 10?

3 A Nope.

4 Q Does it mean all?

5 A No. It means two or more.

6 Q It means two or more.

7 So when the claim tells us that we have
8 to have a plurality of communication services on a
9 single graphical menu, we've got to pay attention
10 to that, correct?

11 A I think, though, once you have defined
12 in the system and the subscriber has access to,
13 say, five communication services, then the later
14 language about the single graphical menu
15 displaying said communication services refers to
16 all five of them, not just two of them.

17 Q Well, it may be, sir. But the claim
18 says a plurality, right?

19 A It does. And if you had an embodiment
20 of the invention with any two communication
21 services, then you could have a graphical menu
22 which only had two services on it.

23 Q I see. So it's your opinion that,
24 unless I have a drawing that shows only two, then
25 I have to have, I guess, as many as are shown in

1 the drawings?

2 A No. As many as are in the specific
3 unified messaging system under consideration. I
4 don't think it's much of a unified messaging
5 system when you've only got two communication
6 services.

7 Q Well, at least we can agree where it
8 says a plurality of communication services, what
9 we need is at least two, correct?

10 A Correct.

11 Q Okay. Then now, at page 7, you
12 presented some of the remarks by the applicant.
13 They were attempting to get the '064 patent from
14 the Patent Office, correct?

15 A Correct.

16 Q And the examiner's job in prosecuting
17 patents is to tell the applicant at least
18 sometimes that he can't have a patent because
19 there's prior art out there, correct?

20 A Correct.

21 Q That's the way the process works. When
22 Judge Luckern was a patent examiner, he
23 represented the United States and told people when
24 they could or couldn't have patents.

25 JUDGE LUCKERN: A long time ago. I

1 Q It was your contention, though, that
2 this "all services in a single graphical menu" was
3 what was necessary to overcome the prior art,
4 correct?

5 A Yes.

6 Q In fact, it didn't turn out that way
7 because the examiner rejected it again, correct?

8 A Correct.

9 Q That much you're sure of, correct?
10 So it doesn't make any sense that the
11 examiner understood that this meant all of the
12 services, or he would have simply allowed the
13 claim at that point, correct?

14 A Presumably there could have been other
15 reasons. Maybe there are things which he said
16 even with this -- this idea of a single graphical
17 menu, it's still not sufficiently distinctive or
18 inventive or different from other prior art or,
19 indeed, the Pepe prior art.

20 Q Well, but you're trying to do a pretty
21 serious thing, sir. You're trying to put the word
22 "all" into the claim language where it recites
23 each of said communication services, correct?

24 A Indeed.

25 Q And you recall the discussion that

BEFORE THE

UNITED STATES INTERNATIONAL TRADE COMMISSION

In the Matter of:) Investigation No.
CERTAIN UNIFIED COMMUNICATIONS) 337-TA-598
SYSTEMS, PRODUCTS USED WITH)
SUCH SYSTEMS, AND COMPONENTS)
THEREOF)

Hearing Room A

United States
International Trade Commission
500 E Street, Southwest
Washington, D.C.

Monday, October 15, 2007

VOLUME V

The parties met, pursuant to the notice of the
Judge, at 8:30 a.m.

BEFORE: THE HONORABLE PAUL J. LUCKERN

1 APPEARANCES:

2
3 FOR COMPLAINANT MICROSOFT CORPORATION:

4 RUFFIN B. CORDELL, ESQ.

5 JOSEPH V. COLAIANNI, ESQ.

6 LINDA L. KORDZIEL, ESQ.

7 JEFFREY R. WHIELDON, ESQ.

8 RAMA ELLURU, ESQ.

9 JOSHUA POND, ESQ.

10 Fish & Richardson, P.C.

11 1425 K Street, N.W., Suite 1000

12 Washington, D.C. 20005

13 (202) 783-5070

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5 SASHA D. MAYERGOYZ, ESQ.

6 Latham & Watkins LLP

7 233 South Wacker Drive, Suite 5800

8 Chicago, Illinois 60606-6306

9 (312) 876-7716

10
11 STEVEN C. CHERNY, ESQ.

12 Latham & Watkins LLP

13 885 Third Avenue, Suite 1000

14 New York, New York 10022-4834

15 (212) 906-1345

16
17 ON BEHALF OF THE ITC STAFF:

18 DAVID O. LLOYD, ESQ.

19 ANNE M. GOALWIN, ESQ.

20 U.S. International Trade Commission

21 Office of Unfair Import Investigations

22 500 E Street, S.W.

23 Washington, D.C. 20436

24 (202) 205-2746

25

1 Attorney-Advisor:

2 ROBERT A. HALL, ESQ.

3 Attorney-Advisor

4 Office of Administrative Law Judges

5 U.S. International Trade Commission

6 500 E Street, S.W.

7 Washington, D.C. 20436

8 202-205-2699

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12 (Index appears at end of transcript)
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1 would still be active?

2 A. Sure.

3 Q. In terms of the computer?

4 A. Sure. My computer checks for my
5 e-mail every 15 minutes or something. So, you
6 know, whether I am there or not, that's
7 activity of things that are higher than the
8 operating system level that happen all the time
9 as well.

10 Q. You gave us a couple of citations
11 involving the Latin abbreviation "i.e." Do you
12 recall those?

13 A. Yes.

14 Q. One of them was, for example, at
15 column 16, lines 3 through 7. So the phrase
16 "as noted above a single phone line precludes
17 the use of computer status monitoring (i.e.,
18 idle or active) for the callee computer." And
19 there you meant to suggest that status was the
20 same as idle or active; is that fair?

21 A. Yes. I think "i.e." basically means
22 "that is," so that defines the concept of
23 computer status.

24 Q. We also have uses in the patent of
25 "e.g." What does "e.g." mean, sir?

1 A. For example.

2 Q. So let's look at RDX-02 at page 7.

3 This is one of your slides. In fact, here you
4 quote for us one of the e.g. examples right in
5 your slides. You tell us the current status of
6 user computer, "e.g., the idle or active status
7 of the callee computer." Do you see that?

8 JUDGE LUCKERN: That's at column 16,
9 line 19 of the '289 patent, which is JX-2.

10 MR. CORDELL: Thank you, Your Honor.

11 THE WITNESS: Yes, I see that.

12 BY MR. CORDELL:

13 Q. And there the proper interpretation of
14 that is idle or active are just two of what are
15 presumably many examples of the status,
16 correct?

17 A. Yes, I see that in this instance the
18 phrase "the current status of the user's
19 computer is" then parenthetically said "(e.g.,
20 idle or active status of the callee computer.)"
21 I think there is quite a few more examples of
22 the expression i.e. than there are of e.g.

23 Q. Let's see if we can find another e.g.

24 A. Defining the user status. If you look
25 across the other column here, I saw a couple.

Exhibit 9

UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE

MICROSOFT CORPORATION,

Plaintiff/Counterclaim Defendant,

v.

ALCATEL LUCENT ENTERPRISE
and
GENESYS TELECOMMUNICATIONS
LABORATORIES, INC.,

Defendants/Counterclaim Plaintiffs.

Civil Action No. 07-90-SLR
Hon. Sue L. Robinson

**EXPERT REPORT OF MR. HENRY HYDE-THOMSON
REGARDING INVALIDITY AND MATERIALITY**

- whether the '439 patent was obvious in light of various combinations with the Chestnut patent, the Miloslavsky '287 patent, the Miloslavsky '292 patent, the Miloslavsky '074 patent, U.S. Patent No. 5,652,789 ("Miner"), U.S. Patent No. 6,480,593 ("Munday"); U.S. Patent Application Pub. No. US 2003/0191676 A1 (and the accompanying provisional application) ("Templeton" and "Temp. Prov"); or *The UnPBX* by Edwin K. Magulies, published by Flatiron Publishing, Inc. in 1997 ("UnPBX").
- whether the '289 patent was obvious in light of various combinations with Chestnut, Miloslavsky '287, the Miloslavsky '292, Miner, UnPBX, Munday or Templeton and the Temp. Prov.
- whether the '064 patent was obvious in light of various combinations with Swartz, Pepe, Nagai, Unified Messenger, and Chestnut.
- whether the '357 patent was obvious in light of various combinations with Swartz, Pepe, Nagai, Unified Messenger, and Chestnut.

III. BASES FOR MY OPINIONS

7. In formulating my opinions for this report, I have considered the claim construction positions offered by Complainant Microsoft Corporation ("Microsoft") and by ALE and Genesys on March 14, 2008. The table below summarizes these constructions:

A. Proposed constructions for the '439 patent

Patent Nos. 6, 421, 439		
Disputed Claim Term	Microsoft's Proposed Construction	ALE/Genesys' Proposed Construction
"telephone network"	"Network for carrying telephony information"	"network for carrying telephony information originated by telephones"
"facilitate connecting the call originated by the first party through the telephone network to the second party"	Ordinary meaning	"to bring about connecting the call originated by the first party through the telephone network to the second party"
"some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network"	"Some of the one or more lists are used to filter the incoming call according to the current status of subscribers on the computer network or according to the current status of the user on the computer network"	"determining whether to allow a call by using lists that are automatically updated based on whether the calling party is present on the computer network or the called party is present on the computer network."

Patent Nos. 6, 421, 439		
Disputed Claim Term	Microsoft's Proposed Construction	ALE/Genesys' Proposed Construction
“controller”		See proposed construction for “the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port.”
“receive the incoming call”	Ordinary meaning	“control routing of the incoming call”
“the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port”	“Hardware or software that accesses the user-selectable criteria in one or more lists of the data structure via the computer network access port”	“hardware or software that accesses the user-selectable criteria in one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call”
“accepting an incoming call designated for the user telephone”	Ordinary meaning	“controlling routing of an incoming call designated for a user telephone”
“computer network”	“Network for carrying digital data”	“network for carrying digital data originated by computers”
“independent”	Ordinary meaning	“a computer network that is physically separate from the telephone network”

B. Proposed constructions for the '289 patent

Patent No. 6,430,289		
Disputed Claim Term	Microsoft's Proposed Construction	ALE/Genesys' Proposed Construction
“monitoring activity of a user computer”	“Monitoring the status of a user computer”	“determining whether a called party's computer is active or idle”
“to process . . . information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the		“A computer on the computer network using pre-set criteria relating to call filtering to process i) information received from the telephone network relating to the call

Patent No. 6,430,289		
Disputed Claim Term	Microsoft's Proposed Construction	ALE/Genesys' Proposed Construction
call originated by the first party"		set-up request from the calling party, and ii) information regarding whether a called party's computer is active or idle, as conditions for determining the called party is available to take a call"
"pre-determined rules"	Ordinary meaning	See proposed construction for "using the set of a pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party"
"at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party"	Ordinary meaning	"receiving at the computer network an indication from the telephone network that a first party requests to set up a telephone call with a second party prior to the time the call is placed by the first party"
"using the set of a pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the		"A computer on the computer network using pre-set criteria relating to call filtering to process i) information received from the telephone network relating to the call set-up request from the calling party, and ii) information regarding whether a called party's computer is active or idle, as conditions for determining the called party is

Patent No. 6,430,289		
Disputed Claim Term	Microsoft's Proposed Construction	ALE/Genesys' Proposed Construction
first party"		available to take a call"
"Information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party"	"Information regarding the monitored status of the user computer of the second party, to determine when the second party is available to take the call originated by the first party"	
"Storing a set of pre-determined rules for determining when the second party is available to take a call from the first party"	Ordinary meaning	Withdrawn
"affiliation list"	"list of associated callers or callees"	
"computer network"	"Network for carrying digital data"	"network for carrying digital data originated by computers"
"telephone network"	"Network for carrying telephony information"	"network for carrying telephony information originated by telephones"

C. Proposed constructions for the '064 and '357 patents

Patent Nos. 6,263,064 and 6,728,357:		
Disputed Claim Term	Microsoft's Proposed Construction	ALE/Genesys' Proposed Construction
"communication options"	"Settings that control how communication services will be handled"	"parameters associated with specific types of communication services"
"communication services"	"Services that facilitate communications via said telephony centric or data-centric network"	"services for communicating through the telephony-centric network and the data-centric network"
"unified messaging system"	"System that allows messages of a data-centric network and a telephony-centric network to be received, stored, retrieved,	"system that allows messages of a data-centric network and a telephony-centric network to be received, stored, retrieved,

Patent Nos. 6,263,064 and 6,728,357:		
Disputed Claim Term	Microsoft's Proposed Construction	ALE/Genesys' Proposed Construction
	and forwarded without regard to the communication devices or networks employed for the transmission of the messages (i.e., in a coordinated manner)”	and forwarded to the communication devices or networks employed for the transmission of the messages”
“telephony-centric network”	“Network that carries telephony information primarily to facilitate information exchange among telephony devices including telephones, pagers, facsimile machines, voice mail boxes”	“a network that carries telephony information used by devices such as telephones, pagers, facsimile machines, and voice mail boxes”
“data-centric network”	“Network that carries digital data, primarily to facilitate information exchange among computers and computer peripherals”	“a network that carries digital data primarily to facilitate information exchange among computers and computer peripherals”
“e-mail service”	“Communication service that includes receiving, storing, retrieving and forwarding emails”	“a communication service for receiving, storing, retrieving, and forwarding e-mail information”
“voice telephone service”	“Communication service that includes receiving, storing, retrieving and forwarding telephony information”	“a communication service for receiving, storing, retrieving, and forwarding telephony information”
“enable option for enabling or disabling the first communication service, and wherein the second communication option includes a second enable option for enabling or disabling the second communication service”	“Communication option that controls the extent to which a communication service is implemented”	“an option that allows a subscriber to turn on or off a communication service”
“a single graphical menu for displaying said	“A single graphical menu for displaying at least a first	“one graphical menu that shows all of the

Patent Nos. 6,263,064 and 6,728,357:		
Disputed Claim Term	Microsoft's Proposed Construction	ALE/Genesys' Proposed Construction
communication options for each of said communication services at the same time"	communication service and option and a second communication service and option at the same time"	communication options associated with the subscriber's communication services"
"telephony server being configured to audibly represent said communication options to said telephone when said subscriber employs said telephone to access said computer-implemented control center" ['064 patent only]	"Telephony server being configured to audibly represent communication options pertaining to at least two communication services to a telephone when the subscriber employs said telephone to access the computer-implemented control center"	"a telephony server that represents the same communication options that are available through the single graphical menu"
"audibly representing said communication options to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center" ['357 patent only]	"Audibly representing communication options pertaining to at least two communication services to a telephone using said telephony server, when a subscriber employs one of the telephones to access the computer-implemented control center"	"audibly representing the same options available through the graphical menu to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center"

8. To the extent that a term was not offered for construction by Microsoft, ALE or Genesys, I have interpreted the term consistently with its ordinary meaning to one of skill in the art. In the event that different constructions are proposed or adopted in this case, I reserve the right to proffer additional opinions and/or to supplement this report to take account of those constructions.

9. I have additionally consulted those documents listed in Exhibits B and C.

10. In this report, I also take into account Microsoft's theories of infringement (where provided), as presently understood. My understanding of Microsoft's infringement theories is based on documents listed in Exhibits B and C.

11. Headings are intended as navigation guides.

IV. BACKGROUND OF THE TECHNOLOGY

A. Telephone Networks

12. Basic telephone networks have been known for decades. The most widely known telephone network is the Public Switched Telephone Network ("PSTN").

13. One particular type of telephone network is known as a Private Branch Exchange ("PBX"), which is a telephone exchange that serves a particular business or office. A PBX is a local network that has phone terminals or extensions connected to a central switch. The PBX handles calls between these extensions as well as connections to the PSTN via trunk lines. PBXs in which an operator switches calls have been known for many decades, and PBXs with automated call switching have been known since at least the 1970s. Since their early days, PBXs offered many services that were not available in the operator network, such as call forwarding, extension dialing and hunt groups.

14. The ability to transmit facsimiles, or copies of documents, over the telephone network has existed since at least the 1970s. Encyclopedia of Computer Science, 3rd ed., (p. 507).

B. Computer Networks

15. Computer networks, which are used to transmit digital data between computers, have also been well-known for decades.

16. The ARPANET was started in 1968, and was available to a variety of companies and universities in the early 1970s. By 1976, the Ethernet Local Area Network ("LAN")

CONTAINS CONFIDENTIAL BUSINESS INFORMATION SUBJECT TO PROTECTIVE ORDER

Executed this 28/3 2008 at London, England

I declare that to the best of my knowledge the foregoing is true and correct as to the facts as stated and my opinions as expressed.

By: HCA Hyde-Thomson
Henry Hyde Thomson

CERTIFICATE OF SERVICE

I, Clement J. Naples, hereby certify that on March 28, 2008, I caused to be served true and correct copies of the foregoing document on the parties listed below as indicated:

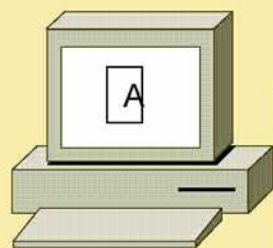
The Honorable Sue L. Robinson, United States District Court District of Delaware J. Caleb Boggs Federal Building 844 N. King Street Wilmington, DE 19801	<input type="checkbox"/> Via First Class Mail <input type="checkbox"/> Via Hand Delivery <input type="checkbox"/> Via Overnight Courier <input type="checkbox"/> Via Facsimile <input type="checkbox"/> Via Electronic Mail
<i>Counsel for Microsoft Corporation:</i>	
Ruffin Cordell, Esquire Kfir B. Levy, Esquire Indranil Mukerji, Esquire Robert Courtney, Esquire Kori Bagrowski Thomas Halkowski FISH AND RICHARDSON 1425 K Street, N.W., Suite 1100 Washington, DC 20005	<input type="checkbox"/> Via First Class Mail <input type="checkbox"/> Via Hand Delivery <input type="checkbox"/> Via Overnight Courier <input type="checkbox"/> Via Facsimile <input checked="" type="checkbox"/> Via Electronic Mail

/s/ Clement J. Naples
 Clement J. Naples

Latham & Watkins LLP
 885 Third Avenue
 New York, NY 10022

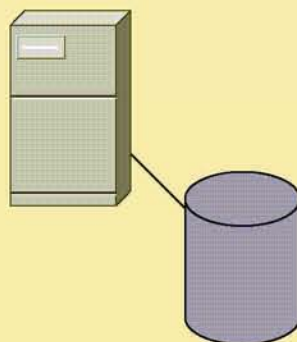
Exhibit 10

The Old World



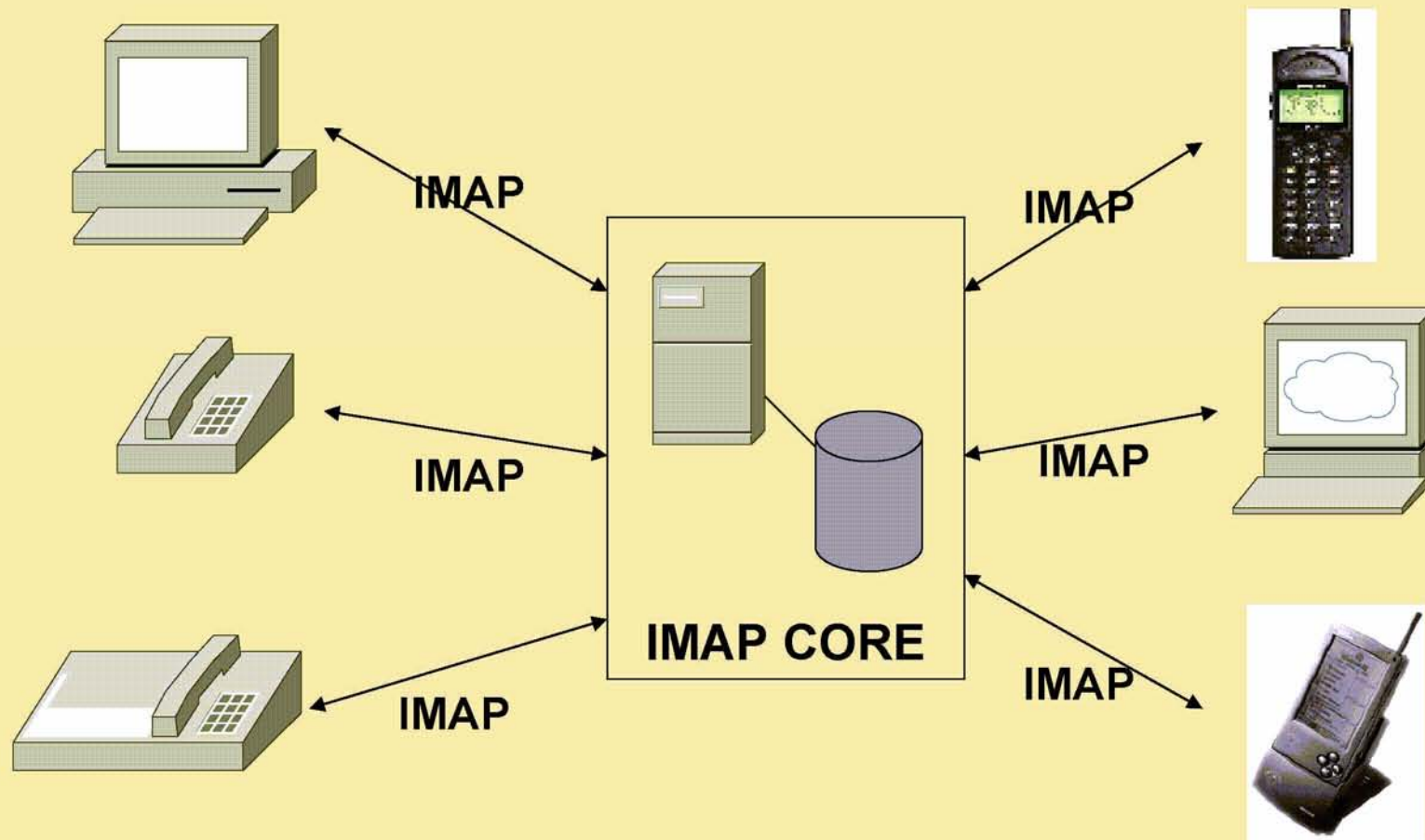
POP

**POP: Only one
computer can access
the messages.**

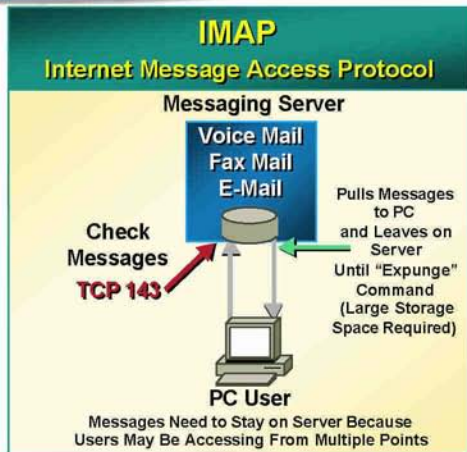
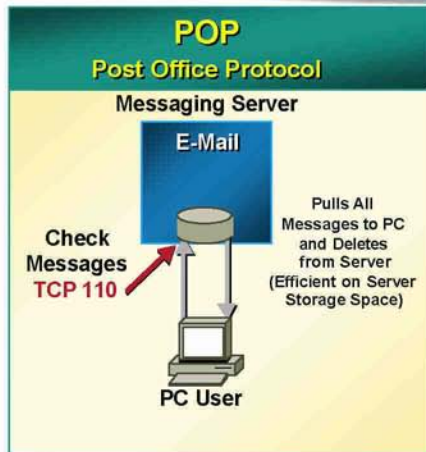


POP CORE

The New World



POP vs. IMAP



IMAP is a key component of unified messaging because:

- The messages are kept on the server
- It allows multiple concurrent access to the same data

2003
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IMAP Impact: Unified Messaging Deployments

- Used by clients to access messages
- All messages are left on the server
- Cisco IT plans for 200 MB per user
 - 30 minutes of voice-mail messages (750 KB per minute of voice message)
 - 177.5 MB leftover for e-mail
- Two TB of disk space for a 10,000 user deployment
- Significant user education needed

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MSAL 05059589

Exhibit 11

PW 7051523

THE UNITED STATES OF AMERICA

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

March 05, 2007

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APPLICATION NUMBER: 09/239,585

FILING DATE: *January 29, 1999*

PATENT NUMBER: 6,263,064

ISSUE DATE: *July 17, 2001*

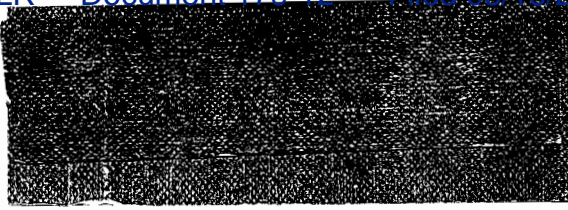
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Certifying Officer

MSAL 00761

10551 U.S. PTP 09/239585	08/29/99	379	201	Class	Subclass	ISSUE CLASSIFICATION
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PATENT NUMBER 6263064
6263064

U.S. UTILITY PATENT APPLICATION

SCANNED <i>KL</i>	O.I.P.E. <i>KL</i>	PATENT DATE JUL 17 2001
Q.A. <i>mc</i>		

SECTOR	CLASS <i>706</i>	SUBCLASS <i>621</i>	ART UNIT <i>2462</i>	EXAMINER <i>Foster</i>
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FILED WITH: ☐ DISK (CRF) ☐ FICHE
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379 201 2462
2748
2645

PREPARED AND APPROVED FOR ISSUE

ISSUING CLASSIFICATION							
ORIGINAL		CROSS REFERENCE(S)					
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
<i>379</i>	<i>201</i>	<i>379</i>	<i>88.16</i>	<i>212</i>			
INTERNATIONAL CLASSIFICATION		<i>370</i>	<i>352</i>				
<i>H04M</i>	<i>3/42</i>						

☐ Continued on Issue Slip Inside File Jacket

<input type="checkbox"/> TERMINAL DISCLAIMER	DRAWINGS			CLAIMS ALLOWED	
	Sheets Drwg. <i>6</i>	Figs. Drwg. <i>6</i>	Print Fig. <i>1</i>	Total Claims <i>20</i>	Print Claim for O.G. <i>1</i>
<input type="checkbox"/> a) The term of this patent subsequent to _____ (date) has been disclaimed. <input type="checkbox"/> b) The term of this patent shall not extend beyond the expiration date of U.S. Patent. No. _____	<i>ROLAND G. FOSTER</i> (Assistant Examiner) <i>1/30/01</i> (Date)			NOTICE OF ALLOWANCE MAILED <i>217 107</i>	
	<i>SCOTT L. WEAVER</i> PRIMARY EXAMINER <i>Art Unit 2645</i> (Primary Examiner) <i>2/4/2001</i> (Date)			ISSUE FEE <i>AA</i> Amount Due <i>\$1240.00</i> Date Paid <i>05/09/01</i>	
<input type="checkbox"/> c) The terminal _____ months of this patent have been disclaimed.	<i>James Ray</i> (Legal Instruments Examiner) <i>3/30/01</i> (Date)			ISSUE BATCH NUMBER <i>1369</i>	

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(Rev. 6/98)

Formal Drawings (date) *3/30/01*

ISSUE FEE IN FILE (LABEL AREA)

MSAL 00762

(FACE)



Bib Data Sheet

UNITED STATES DEPARTMENT
Patent and Trademark OfficeAddress: COMMISSIONER OF PATENT
Washington, D.C. 20231

SERIAL NUMBER 09/239,585	FILING DATE 01/29/1999 RULE -	CLASS 379	GROUP ART UNIT 2748 2645
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APPLICANTS

STEPHEN C. O'NEAL, SAN FRANCISCO, CA ;
JOHN JIANG, DANVILLE, CA ;

** CONTINUING DATA *****

None R.B.F. ✓

** FOREIGN APPLICATIONS *****

None R.B.F. ✓

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** 02/12/1999

Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	STATE OR COUNTRY CA	SHEETS DRAWING 6	TOTAL CLAIMS 22	INDEPENDENT CLAIMS 3
35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after Allowance R.B.F.				
Verified and Acknowledged	Examiner's Signature	Initials		

ADDRESS

JOSEPH A NGUYEN
BEYER & WEAVER
PO BOX 61059
PALO ALTO, CA 94306

TITLE

CENTRALIZED COMMUNICATION CONTROL CENTER FOR VISUALLY AND AUDIBLY UPDATING
COMMUNICATION OPTIONS ASSOCIATED WITH COMMUNICATION SERVICES OF A UNIFIED MESSAGING
SYSTEM AND METHODS THEREFOR

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I hereby certify that this paper and the documents and/or fees referred to as attached therein are being deposited with the United States Postal Service on January 29, 1999 in an envelope as "Express Mail Post Office to Addressee" service under 37 CFR §1.10, Mailing Label Number E1.043333794US, addressed to the Assistant Commissioner for Patents, Washington, DC 20231

Joseph A. Nguyen



Attorney Docket No.:

ITC1P001/ITC-9903



UTILITY PATENT APPLICATION TRANSMITTAL (37 CFR. § 1.53(b))

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Sir: This is a request for filing a patent application under 37 CFR. § 1.53(b)

For: CENTRALIZED COMMUNICATION CONTROL CENTER AND METHODS THEREFOR

Application Elements:

- ☒ 38 Pages of Specification, Claims and Abstract
☒ 6 Sheets of Drawings

Accompanying Application Parts:

- ☒ Return Receipt Postcard

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General Authorization for Petition for Extension of Time (37 CFR §1.136)

☒ Applicants hereby make and generally authorize any Petitions for Extensions of Time as may be needed for any subsequent filings. The Commissioner is also authorized to charge any extension fees under 37 CFR §1.17 as may be needed to Deposit Account No. 50-0388 (Order No. ITC1P001).

☒ Please send correspondence to the following address:

Joseph A. Nguyen
BEYER & WEAVER, LLP
P.O. Box 61059
Palo Alto, CA 94306

Tel (650) 493-2100
Fax (650) 493-2102

Date:

01/29/1999

Joseph A. Nguyen
Registration No. 37,899

**CENTRALIZED COMMUNICATION CONTROL CENTER AND
METHODS THEREFOR**

BY INVENTORS:

Stephen C. O'Neal

John Jiang

Related Applications

The following commonly-owned, co-pending patent applications are related and are incorporated herein by reference.

~~Serial No. 09/239,560~~
~~Docket ITC-9901~~, filed 1/29/99, entitled "INTEGRATED MESSAGE
STORAGE AND RETRIEVAL SYSTEM DISTRIBUTED OVER A LARGE
GEOGRAPHICAL AREA";

R.C.F.

~~Serial No. 09/240,367~~
~~Docket ITC-9902~~, filed 1/29/99, entitled "A SYSTEM AND METHOD FOR
PROVIDING UNIFIED MESSAGING TO A USER WITH A THIN WEB
BROWSER

R.C.F.

~~Serial No. 09/239,584~~
~~Docket ITC-9904~~, filed 1/29/99, entitled "COMPUTER-IMPLEMENTED
CALL FORWARDING OPTIONS AND METHODS THEREFOR IN A UNIFIED
MESSAGING SYSTEM";

R.C.F.

~~Serial No. 09/240,368~~
~~Docket ITC-9905~~, filed 1/29/99, entitled "INTERACTIVE BILLING
SYSTEM UTILIZING A THIN WEB CLIENT INTERFACE";

R.C.F.

~~Serial No. 09/240,368~~
~~Docket ITC-9906~~, filed 1/29/99, entitled "A SYSTEM AND METHOD TO
MANAGE PHONE SOURCED MESSAGES";

R.C.F.

~~Serial No. 09/240,434~~
~~Docket ITC-9907~~, filed 1/29/99, entitled "METHOD AND APPARATUS
FOR NETWORK INDEPENDENT INITIATION OF TELEPHONY";

R.C.F.

~~Serial No. 09/240,435~~
~~Docket ITC-9908~~, filed 1/29/99, entitled "APPARATUS AND METHOD
FOR DEVICE INDEPENDENT MESSAGING NOTIFICATION";

R.C.F.

~~Serial No. 09/240,436~~
~~Docket ITC-9909~~, filed 1/29/99, entitled "APPARATUS AND METHOD
FOR CHANNEL-TRANSPARENT MULTIMEDIA BROADCAST MESSAGING";

R.C.F.

ITC-9903/ITC1P001

- 1 -

MSAL 00765

Serial No. 09/239,589

R.G.F

~~Docket ITC 9910~~, filed 1/29/99, entitled "VOICE ACCESS THROUGH A DATA-CENTRIC NETWORK TO AN INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM".

5

Background of the Invention

The present invention relates to communication services available via a data-centric network (i.e., a network that carries digital data) and a telephony-centric
 10 network (i.e., a network that carries telephony information such as voice, fax, pager, and the like). More particularly, the present invention relates to a centralized facility and methods therefor that allow a subscriber of various communication services to review and customize his communication options, in an interactive and simplified manner, via either the data-centric network or the telephony-centric network.

Both the data-centric network (e.g., a distributed computer network) and the
 15 telephony-centric network (e.g., public telephone network) have existed for some time. Broadly speaking, the data-centric network (such as the Internet) may be thought of as a global computer network that connects millions of computer terminals all over the world in such a way that digitized information can be exchanged
 20 irrespective of the different hardware and software platforms that may be utilized to gain access to the data-centric network. People and businesses around the world use the data-centric network to retrieve information, communicate and conduct business globally, and access a vast array of services and resources on-line. In a similar manner, the telephony-centric network (whether wired or wireless) may also be
 25 thought of as another global network that connects the millions of telephony devices (such as voice-oriented telephones, pagers, facsimile machines, voice mail boxes, and the like) together in such a way that a user at one of the telephony devices can readily transmit information to other telephony devices irrespective of geographic boundaries.

In the past, these two networks existed as separate domains. This is because
 30 the widely accessible data-centric network is a fairly recent phenomenon. For decades, the only network that has been available to the masses is the analog

telephony-centric network, starting with the telegraph network of the nineteenth century. However, as more and more of the services traditionally offered through the telephony-centric network are being offered in a digital format by the data-centric network, the distinction between the data-centric network and the telephony-centric network begins to blur. Irrespective of whether these two networks exist as separate networks physically or conceptually going forward, the legacies of their separate existence can be seen in the various different communication services and communication devices that currently exist.

By way of example, there exist many different communication devices and services available today to allow a person to communicate to another person, e.g., telephones, facsimile machines, electronic mail (e-mail), pagers, voice mail, and the like. Generally speaking, a telephone is a communication device employed to transmit and receive speech and other sounds. A facsimile machine is a communication device to transmit and receive graphical data. A pager is a highly portable device that allows its user to receive data, and in some cases transmit limited data to a pager service provider. A voice mail box is essentially a service that allows one person to temporarily store telephone messages for retrieval by another. E-mail services allow e-mail users to transmit and receive data from computer terminals connected to the data-centric network. All these devices and services are well known in the art and will not be elaborated further for the sake of brevity.

Currently, these communication services are viewed, both by the service providers who create and maintain the network infrastructure and the subscribers who employ the devices and networks for communication, as separate services. This is due, partly but not entirely, to past government deregulation efforts and gradual technological evolution that have given rise to different service providers, all competing to provide the communication services to individual consumers. Thus, it is not unusual for a consumer to have an e-mail account with one service provider, a telephone account with another service provider and a pager account with yet another service provider. Even if the different services are contracted through a single service provider, the dual existence of the data-centric network and the telephony-centric network, as well as existing billing and account management infrastructures, often force the service provider to manage each of these services as a separate account.

One of the consequences of having different accounts for different services is the proliferation of telephone numbers, facsimile numbers, and pager numbers that a typical consumer must deal with. Thus, it is not at all unusual for a consumer to have a home telephone number, a work telephone number, one or more cellular telephone numbers, a pager number, and a facsimile number, with each of these numbers being assigned to a different communication device. Not only are these various numbers difficult to remember for the consumer, they are confusing to others.

A more serious consequence is the burden on the consumer who needs to manage the communication options associated with the different services (which are now assigned to different physical devices and managed as different accounts) to ensure that incoming and outgoing messages are properly handled. By way of example, a person who travels may wish to forward voice calls made to his home and office telephone numbers to his cellular telephone or hotel telephone. Likewise, he may wish to divert facsimiles sent to his office facsimile machine to a facsimile machine that is more local. While in a meeting, however, he may wish to temporarily divert the voice calls to his voice mail box or forward it to another person for handling. To stay in touch, these communication options may need to be changed many times during the course of the day and/or each time he arrives at a new location.

To accomplish the above, the person in the above example currently needs to first ascertain the current communication option settings associated with the various services that he uses. Unless he is diligent in noting and/or remembering the recent changes in the communication option settings, he may need to call each of the service providers to find out what the current communication option settings are. Assuming that he knows the current communication option settings and such calls need not be made, the user must still access each communication device and/or contact each service provider to reroute the incoming and outgoing messages.

By way of example, some facsimile machines currently allow the user to forward the incoming facsimile to another facsimile machine by entering a particular combination of the forwarding number and predefined codes on the facsimile machine keypad. Likewise, many telephone systems require the user to physically enter the forwarding telephone number and predefined codes on the keypad of the telephone

from which forwarding originates. However, this requires the user to be physically present at the facsimile machine or telephone from which forwarding originates. If he owns one of these telephones or facsimile machines and is on the road, such forwarding would not be possible absent help from another person who has such physical access.

The fact that each communication service is treated as a different account also requires the user in the example above to access each account and/or service provider to accomplish the changes. Thus, multiple calls may need to be made to change the communication option settings associated with the different communication services. Even with automated response systems in place to handle such changes, these calls take time and can aggravate even the most patient users, especially if multiple calls need to be made to the multiple service providers each time he moves from one location to another. As can be appreciated by those skilled in the art, such approach is at best time consuming and unwieldy.

More typically, a busy user would just not bother changing the communication options associated with the various communication devices that he owns. He would rather suffer the possibility of missing out on some messages than constantly contacting the different service providers and making changes on individual services. In this case, the communication services that he owns are not employed to their fullest potential.

In view of the forgoing there are desired improved techniques for allowing a user of communication services to review and customize the communication options associated with these services in a simplified and convenient manner.

Summary of the Invention

The invention relates, in one embodiment, to a computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the plurality of communication services. The communication options include parameters associated with individual ones of the plurality of the communication services and routings among the plurality of communication services. The plurality of communication services comprising a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network. The communication options is accessible via display terminals coupled to the data-centric network and via telephones coupled to the telephony-centric network. The computer-implemented control center includes a subscriber communication profile database. The subscriber communication profile database has therein an account pertaining to the subscriber. The account includes the communication options for the subscriber.

There is also included a computer server coupled to exchange data with the subscriber communication profile database. The computer server is configured to visually display the communication options on one of the display terminals when the subscriber employs the one of the display terminals to access the computer-implemented control center. The computer server also is configured to receive from the subscriber via the one of the display terminals a first change to the communication options and to update the first change to the account in the subscriber communication profile database.

There is further included a telephony server coupled to exchange data with the communication profile database. The telephony server is configured to audibly represent the communication options to one of the telephones when the subscriber employs the one of the telephones to access the computer-implemented control center. The telephony server also is configured to receive from the subscriber via the one of the telephones a second change to the communication options and to update the second change to the account in the subscriber communication profile database.

The invention relates, in another embodiment, to a computer-implemented method for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the plurality of communication services. The communication options include parameters

5 associated with individual ones of the plurality of the communication services and routings among the plurality of communication services. The plurality of communication services includes a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network. The communication options are accessible via display terminals coupled to the data-centric

10 network and via telephones coupled to the telephony-centric network. The method includes providing a subscriber communication profile database. The subscriber communication profile database has therein an account pertaining to the subscriber. The account includes the communication options for the subscriber.

There is also included visually displaying the communication options on one

15 of the display terminals, using a computer server coupled to exchange data with the subscriber communication profile database, when the subscriber employs the one of the display terminals to access the computer-implemented control center. There is further included receiving from the subscriber via the one of the display terminals at the computer server a first change to the communication options. The first change to

20 the communication options pertains to either the voice telephone service or the e-mail service. Additionally, there is included updating the first change to the account in the subscriber communication profile database, thereby resulting in a first updated subscriber communication profile database, wherein subsequent messages to the subscriber at the unified messaging system, including the voice telephone service, are

25 handled in accordance with the first updated subscriber communication profile database.

These and other features of the present invention will be described in more detail below in the detailed description of the invention and in conjunction with the following figures.

Brief Description of the Drawings

The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference
5 numerals refer to similar elements and in which:

Fig. 1 depicts, in one embodiment, the general overview of the unified message system.

Fig. 2 illustrates, in one embodiment, how the 48 telephone lines provided per T1 link may be divided among the sub-servers of the telephony server.

10 Fig. 3, in one embodiment, the user interface portion of the computer-implemented control center, representing the visual display panel for displaying the communication options pertaining to a particular subscriber on a computer display screen.

15 Fig. 4 shows the communication options in greater detail, in accordance with one embodiment of the present invention.

Fig. 5 is a flow diagram depicting, in one embodiment, the relevant steps of a computer-implemented process for handling access to the unified messaging system through the telephony-centric network by a subscribing or a non-subscribing caller.

20 Fig. 6 is a flow diagram depicting, in one embodiment, the relevant steps of a computer implemented process for handling access to the unified messaging system through a computer network by a subscriber.

Detailed Description of Preferred Embodiments

The present invention will now be described in detail with reference to a few preferred embodiments thereof and as illustrated in the accompanying drawings. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be obvious, however, to one skilled in the art, that the present invention may be practiced without some or all of these specific details. In other instances, well known process steps have not been described in detail in order not to unnecessarily obscure the present invention.

10 In accordance with one aspect of the present invention, there is provided a computer-implemented control center which is coupled to the data-centric network and the telephony-centric network, and which allows a user to access, using either a telephone or a computer, the communication options associated with the various communication services of a unified messaging service. Unlike the prior art approach
15 which requires the user to contact individual service providers/accounts and/or to access individual communication devices to review and change the communication options associated therewith, the computer-implemented control center allows the communication options associated with the various communication services to be accessed substantially all at once. That is, the computer-implemented control center
20 provides a single central facility through which the communication option settings associated with the different communication services may be reviewed and/or modified.

In accordance with one aspect of the present invention, the communication options, which include the options associated with individual communication services
25 as well as routings among the different individual communication services, are accessible using either a computer network interface (e.g., a web page) or a telephone network interface (e.g., via a telephone). The communication option settings themselves do not reside with individual communication devices or require access through a particular communication device (such as with the assigned facsimile
30 machines or telephones discussed earlier). Rather, the communication option settings

are centralized within the universally accessible computer-implemented control center and can be utilized to properly control the communication options associated with the various services and to facilitate control of the routings therebetween. More importantly, they can be reviewed and modified by a properly authenticated subscriber of the unified messaging service through any suitable computer or telephone irrespective of the geographic location from which the accessing and/or modifications are made.

In the aforementioned co-pending patent applications entitled "INTEGRATED MESSAGE STORAGE AND RETRIEVAL SYSTEM DISTRIBUTED OVER A
 10 LARGE GEOGRAPHICAL AREA" (Serial No. 09/239,560, Docket ITC-9901, filed 1/29/99), and "A SYSTEM AND METHOD FOR PROVIDING UNIFIED MESSAGING TO A USER
 WITH A THIN WEB BROWSER" (Serial No. 09/240,367, Docket ITC-9902, filed 1/29/99), which are all incorporated herein by reference, some inventive unified messaging services and their various features are disclosed. Although the present invention may be implemented
 15 on any unified messaging system, reference may be made to the above-mentioned co-pending patent applications for details pertaining to preferable unified messaging systems on which the present invention may be implemented.

In general terms, a unified messaging system benefits a user by integrating various communication services, which up to now have existed as separate services.
 20 The integration facilitates simplified management, billing, and more importantly the routing of messages among the various services. With a unified messaging service, a user may, for example, specify that an incoming facsimile be forwarded to a computer for viewing or to a printer for printing, listen to e-mail messages through a telephone, receive pager notification when a facsimile is received, or the like. Within limits, a
 25 unified messaging system allows messages to be received, stored, retrieved, and/or forwarded (in the original format or in a different/abbreviated format) without regard to the communication devices and/or networks (i.e., data-centric vs. telephony-centric) employed for the transmission of the messages.

A unified messaging system implemented on a data-centric network takes the
 30 unified messaging system concept a step further by internally storing and manipulating the messages in a digital format irrespective of whether the message was

received and/or will be sent in the digital or analog format . As is well known, digital formatting increases the flexibility with which information contained in the messages can be analyzed, stored, manipulated, and/or routed among the various communication devices. More importantly, the implementation of the unified messaging system on a data-centric network permits the subscriber to access his account through any computer or telephone irrespective of the geographic location from which the accessing and/or modifications are made.

To facilitate discussion, Fig. 1 depicts, in accordance with one embodiment of the present invention, the general overview of a unified message system 101. With reference to Fig. 1, there is shown a user computer 100, representing a computer that may be employed to access and/or modify the communication options associated with the communication services offered by the unified messaging system. Although user computer 100 is shown to be a desktop personal computer (such as an Intel-based personal computer), user computer 100 may in fact represent any computing device capable of accessing the data-centric network (represented by reference 102 in Fig. 1). By way of example, user computer 100 may represent a laptop computer, which may access the data-centric network either through wired connections or in a wireless manner. As another example, user computer 100 may represent a personal digital assistant (PDA) or a palm-top computer, or a thin-client type computer.

Data-centric network 102 may represent any computer network which couples together users from geographically dispersed locations. In a preferred embodiment, data-centric network 102 represents the Internet, although data-centric network 102 may also represent a Wide Area Network (WAN), a Local Area Network (LAN), a Virtual Private Network (VPN) or any similarly suitable networking arrangement that allows users to log in from a remote terminal.

With reference to Fig. 1, there is shown data link 104, representing the high speed data lines for transmitting and receiving data between unified messaging system 101 and data-centric network 102. In a preferred embodiment, data link 104 is implemented by high speed T1 data lines, although other types of data lines such as fiber optics may also be employed. A network interface system 105 couples data link 104 to the remainder of unified messaging system 101, which is shown to include four

servers as shown (the servers are discussed later herein).

Network interface system 105 represents the interface system that ensures data is properly transmitted and received between unified messaging system 101 and data-centric network 102. Of course network interface system 105 may vary depending on the implementations of the data-centric network and/or the portion of unified messaging system 101 to which network interface system 105 is coupled.

In the case of the Internet, one current preferred implementation of network interface system 105 may include a router 106, a hub 108, a DNS (Domain Name System) facility 110, and a firewall 112. Typically, the router 106 is a piece of hardware or software that examines the IP address of data packets and determines the routing of the data packets based on the IP address.

Router 106 acts cooperatively with hub 108 and DNS facility 110 to permit properly addressed data packets to be received through firewall 112. Router 106, hub 108, DNS facility 110, and firewall 112 are conventional and will not be belabored here for the sake of brevity.

At the heart of the unified message system are a set of servers which are coupled to exchange data and are connected to firewall 112 and the public telephone network. Typically, a server represents a computer that processes data for use by other data-consumer devices (such as other servers, computers or any of the communication devices through a proper interface circuit). There is shown a database server 120, which is employed to, among other tasks, organize and maintain the subscriber communication profile database. The subscriber communication profile database itself may reside with database server 120 and represents a data store of subscriber accounts and communication option settings associated therewith. Incoming messages to a particular subscriber or outgoing messages from that subscriber are formatted and routed in accordance with the communication option settings stored in the subscriber communication profile database. Properly authorized changes to the communication option settings will be reflected in the communication option settings stored in the subscriber communication profile database and employed to handle subsequent messages (whether incoming or outgoing).

Subscriber authentication data may be employed to access to a subscriber communication profile database. Subscriber authentication data may be stored in the database server. Subscriber authentication may be accomplished using several techniques. For example, a numeric password, an alphanumeric password, a hidden
5 code wherein the password is randomly hidden in a string (i.e., xxxppppxx, xppppxxxx, etc.) and biometrics (e.g., retina scans, hand prints, palm prints, finger prints, voice recognition, etc.).

A web server 122 is employed to facilitate interaction between unified messaging system 101 and data-centric network 102. Web server 122 represents one
10 of the system-side servers (i.e., a server that handles the exchange of data with the user's computer via the data-centric network) and is employed, for example, to present to user computer 100 the log-in screen when a subscriber employs user computer 100 to access the unified messaging service. Once that subscriber is properly authenticated (e.g., through a password procedure or another suitable authentication
15 procedure), web server 122 then communicates with database server 120 to obtain the current communication option settings for that subscriber and to display the current communication option settings and an individualized web page to the subscriber for review.

In one preferred embodiment, web server 122 is employed to store all
20 messages pertaining to a particular subscriber. The messages are stored as files in web server 122. These messages may represent, for example, voice files, facsimiles, e-mail messages, voice mail messages, or the like. Pointers in database server 120 facilitate access to the stored messages in web server 122. However, it is contemplated that the messages may be stored in any of the servers discussed herein
25 and/or in a separate storage device accessible by the servers.

An e-mail server 124 is employed to process incoming and outgoing e-mail messages. By way of example, e-mail server 124 may be employed to format/translate the e-mail messages so that they can be properly transmitted to other e-mail systems and understood thereat. For incoming messages, e-mail server 124 may be employed
30 to format/translate the information transmitted via the incoming e-mail and to prepare them for use by other data consumers.

A telephony server 126 is shown coupled between telephone link 128 and the remainder of the unified messaging system and may include any number of sub-servers, such as are shown in Fig. 2. In a manner analogous to web server 122, telephony server 126 represents a systemt-side server (i.e., a telephony server that handles the exchange of information with the user via the telephony-centric network) and is employed to facilitate interaction between unified messaging system 101 and telephony-centric network 129. Telephony server 126 may be employed to, for example, translate the telephone signals (such as the dialed digits) into a digital format for the purpose of authenticating and allowing subscriber access. Telephony server 126 may also be employed to translate such dialed digits and/or other telephone signals (such as a facsimile tones or verbal commands) into digital data, which may then be employed to facilitate handling of messages and/or the communication option settings. In one embodiment, Dialogic board models D 240 SC-T1, D 480 SC-1, CP-4 / SC, CP-6 / SC, and/or CP-12 / SC (available from Dialogic Corporation of Parsippany, NJ) are employed to facilitate the translation between telephone signals and digital data. Once translation is performed, software within telephony server 126 employs the digital data to decide how to handle the message using the communication option settings obtained from the subscriber communication profile database. If the subscriber, through predefined dialing sequences, indicates that he wishes to review and/or modify the communication option settings, software within telephony server 126 operates cooperatively with database server 120 to affect the change to the communication option settings. Once the communication option settings are reflected in the subscriber communication profile database stored in database server 120, the new communication option settings are consulted each time a message needs to be handled by the unified messaging system.

Telephony-centric network 129 represents any telephone network which couples together telephony-type communication devices (e.g., facsimile machines, pagers, telephones) from geographically dispersed locations. By way of example, telephony-centric network 129 may represent a plain old telephone system (POTS), a wired telephone network popularly known as Public Service Telephone Network (PSTN) or a cellular network or a combination thereof. Telephony-centric network 129 is well known and will not be discussed in great detail here for the sake of

brevity.

A telephone 130 is shown coupled to telephony-centric network 129. In reality, it should be understood that a wide variety of telephony devices (which are not shown to simplify the illustration) are connected to telephony-centric network 129.

- 5 Some of these exemplary communication devices are, as mentioned, facsimile machines, pagers, cellular telephone sets, wired telephone sets, and the like.

Telephone link 128 represents the telephone communication channels for transmitting and receiving telephone signals between unified messaging system 101 and telephony-centric network 129. In a preferred embodiment, telephone link 128 represents high bandwidth T1 telephone links, although other types of telephone links may also be employed. Note that there is no requirement that the data transmitted on telephone link 128 be analog. In fact, with the upcoming convergence of data networks and telephone networks, the telephony information that traverses telephone link 128 may well be digital (in which case, telephony server 116 will be adapted to handle digital telephony signals instead of analog telephony signals). As a noteworthy point, it is expected that as data networks and telephone networks converge, the relevant functionality represented by the servers herein may still apply, albeit with the proper modification to handle an all-digital combined data/telephone network.

Fig. 2 illustrates, in accordance with one embodiment of the present invention, how the 48 telephone lines provided per T1 link may be divided among the sub-servers of telephony server 126. As shown in Fig. 2, 45 of the telephone lines may be employed by a main message server 202 to handle the incoming/outgoing voice calls, the incoming voice mail messages, and the incoming facsimiles. Of the 45 telephone lines, 32 may be provisioned for the subscribing or non-subscribing users to dial into the unified messaging system, and the other 13 telephone lines may be employed to allow outgoing calls to be made from within the unified messaging system. The outgoing calls may, for example, be calls destined for the unified messaging system but are rerouted out of the unified messaging system in accordance with a subscriber's communication option setting or they may be originated by the subscriber, who dials into the unified messaging system (using a toll-free access number, for example) and requests an outgoing call be made therefrom to some destination number (for example

by punching in the "#" key after authentication, followed by the destination number), thus employing the unified messaging system as a type of calling card service.

One of the 48 telephone lines of the T1 link may be reserved for outgoing facsimile transmission, which is handled by an outgoing facsimile server 204.

- 5 Another telephone line may be apportioned for the outgoing paging service, which is handled by an outgoing pager server 206. Outgoing voice-mail messages are handled by voice mail server 208, which is coupled to another one of the 48 telephone lines of the T1 link as shown.

- To elaborate, outgoing voicemails are voice messages sent to a voicemail
10 phone number which may be created via the web or the telephone. Outgoing voicemails may be new voicemails, replies to other messages or forwarded as a voicemail. For example, when forwarding a voicemail via the web, the voicemail may be treated as an attachment to a speech synthesized text message with the recipient address as a telephone number. Outgoing voicemail servers may be geographically
15 distributed and communicate with each other via internet in such a way that the server nearest the destination voicemail phone number may be assigned to send the voicemail via either a circuit-switched call or packet-switched call.

- Outgoing facsimiles are facsimile messages sent to a facsimile telephone number which may be created via the web or the telephone. Outgoing facsimiles may
20 be new facsimiles, replies to other messages, forwarded as a facsimile or call-forwarded as a facsimile in which the system stores the incoming facsimile and then forwards the facsimile to the subscriber's facsimile-forward number. For example, when forwarding a facsimile via the web, the facsimile may be treated as an attachment to Tiff conversion of a text message with the recipient address as a phone
25 number. Like outgoing voicemail servers, outgoing facsimile servers may also be geographically distributed. Outgoing facsimile servers may communicate with each other via internet in such a way that the server nearest to the destination facsimile telephone number may be assigned to send the facsimile via either a circuit-switched call or packet-switched call.

- 30 Outgoing pages are paging messages sent to a pager number which may be

created via the telephone either by the caller or by the system when sending notification. Like outgoing voicemail servers, outgoing page servers may also be geographically distributed. Outgoing page servers may communicate with each other via the internet in such a way that the server nearest to the destination pager telephone number may be assigned to send the page via either a circuit-switched call or packet-switched call.

There may also be outgoing emails and their servers that do not involve circuit switched calls. Some pagers may be alphanumeric type and can receive messages as an email. In this case, the outgoing pager server may delegate these requests to the outgoing email servers.

In one embodiment, messages sent to the unified messaging system may be stored in web server 122 with pointers to these messages being held in database server 120. The above mentioned set of sub-servers (outgoing facsimile server, outgoing pager server and outgoing voice mail server) are arranged to make requests to the database server for outgoing messages stored on the web server. If an outgoing message is detected by a sub-server, software within the sub-servers decides how to handle the outgoing message according to the communication option settings obtained from the subscriber communication profile database. Again, a Dialogic board may be employed, in one embodiment, to facilitate the translation between the stored data and the outgoing telephone signal.

All types of outgoing message requests (voice mail, facsimile, email, pages) are queued in the database server. These requests can also be associated with a delivery time (e.g., the default time is "now"). Each type of request may be stored in a separate queue. An outgoing server of a particular type of message periodically checks its queue from the database server to see if any request's time is up for delivery.

It should be noted that Fig. 2 shows only one exemplary way to divide the T1 telephone lines among the various sub-servers of telephony server 126. Depending on the traffic pattern generated by subscribing and non-subscribing users of the unified messaging system, these lines and sub-servers may be scaled as necessary.

Fig. 3 illustrates, in accordance with one embodiment of the present invention,

the user-interface for an exemplary computer-implemented control center, representing the visual display panel for displaying the communication options pertaining to a particular subscriber on a computer display screen. Through computer-implemented control center 302, the user may quickly and conveniently review the communication option settings associated with the various services and make changes thereto. That is, the computer-implemented control center 302 serves as the centralized control panel for reviewing and/or customizing the communication options associated with the various communication services. Fig. 4 illustrates aspects of computer-implemented control center 302 in greater detail.

10 In the exemplary implementation of Fig. 3, six representative communication options are shown. The call forwarding service 304, if it is enabled, allows incoming calls through telephony-centric network 129 to be routed to a provided forwarding number 306. The call forwarding option setting may also be seen in the detailed computer-implemented control center view of Fig. 4, which shows the communication options in greater detail.

To accomplish the forwarding, telephony server 126 consults, after a call is made to a subscriber's telephone number, the subscriber communication profile database in database server 120. If the call forwarding option is enabled, that call is then forwarded to the forwarding number specified by telephony server 126 via an outgoing telephone line. If the forwarding number does not pick up, the call may be rerouted, for example, to the subscriber's voice mail box. If the call forwarding option is not enabled and the caller does not choose other methods discussed below to try to contact the subscriber, the call may then be forwarded to the subscriber's voice mail box as well.

25 The "follow me" service 308 gives the subscriber the ability to designate a set of telephone numbers where he may likely be found and gives the caller the option to try to find the subscriber (or someone who may appropriately handle the incoming call) at those numbers. By way of example, during a work day, a given subscriber may be contacted either at his main office telephone, his secondary office telephone, or his cellular telephone in his car. On the weekend, that same subscriber may be found at home or at a cellular telephone in his boat. The office/car set of telephone

numbers may be designated a primary set 310 and the home/boat set of telephone numbers may be designated a second set. Fig. 4 shows the communication options associated with the follow me service in greater detail.

On a week day, the subscriber may enable the follow me service option and
 5 select primary set 310 as the set of telephone numbers where he may likely be found. On the weekend, the subscriber may enable the follow me service option and select the secondary set, for example. From the caller's perspective, the follow me service is preferably an on-demand service. That is, the caller is preferably given the option to decide whether to employ the follow me service by pressing a predefined key in
 10 response to instructions or to simply allow the call to be passed to voice mail if unanswered.

If the follow me service is enabled by the subscriber and chosen by the caller, telephony server 126 will try to place outgoing calls to the numbers designated in the selected set starting with the first number in the set. To ensure that the call is not
 15 inadvertently completed vis-a-vis by a bystander who happens to be near the destination telephone and picks up the telephone when it rings, telephony server 126 may allow the caller to record his name. Telephony server 126 then announces the name to the person picking up the destination telephone prior to giving that person a choice of whether to accept the call. If the person who picks up the call is indeed the
 20 person for whom the call is intended, the entry of a predefined key press (on instructions by telephony server 126) on the destination telephone keypad will allow telephony server 126 to complete the end-to-end connection. In this manner, the follow me service may be employed as a call screening mechanism if desired. Telephony server 126 may try all the numbers in the set in sequence until the
 25 subscriber is found. If not, the call may be allowed to pass into the subscriber's voice mail box.

In one embodiment, the follow-me service may not always use the same sequence to callout a subscriber when the subscriber has set up several numbers as his possible locations (e.g., weekday routine or weekend and evening routine). The
 30 follow-me service may use the number where the subscriber is last located (stored in memory) as the first number to dial in the sequence provided the time for the last

location happened within a certain interval (e.g., an hour).

An alternate number service 312 gives the subscriber the ability to designate a telephone number as an alternate number where the caller can attempt to locate the subscriber (or someone who may appropriately handle the incoming call) at a number designated in advance (314). Fig. 4 shows the communication options associated with the alternate number service in greater detail. The alternate number option is similar to call forwarding with the exception that the alternate number option is an on-demand service. That is, the caller is preferably given the option to decide whether to employ the alternate number service by pressing a predefined key in response to instructions or to simply allow the call to be passed to voice-mail if unanswered. In all other respects, the alternate number service may function in the same way as the call forwarding service. An alternate number may also be used to set a personal operator number (e.g., your secretary).

A message alert option 316 gives the subscriber the ability to select whether to be alerted when a message is received. The message that triggers the alert may be specified using any number of filtering criteria stored as part of the subscriber communication option settings. In the example of Fig. 3, the filtering criteria is "urgent" (318) although any type of filtering may be applied. For example, the filtering criteria could be the message's sender, subject or content. The sender could be identified by his email address or phone number (e.g., caller ID).

Fig. 4 shows, in one embodiment, the communication option settings associated with the unified messaging service in greater detail. With respect to the message alert service, the alerting itself may be accomplished using any of the communication devices controlled by the unified messaging system (e.g., pager, telephone at a designated number, voice mail in a designated voice mail box, facsimile at a designated facsimile number, e-mail at a designated e-mail address, and the like). In accordance with one particularly advantageous embodiment, the message alert is sent to a pager via outgoing pager sub-server 206 since it is the device most likely to be near the subscriber. In one embodiment, the server that sends the alert (e.g., the web server if the incoming message is an e-mail, the telephony server if the incoming message is a facsimile or telephone call) may send out a predefined

alphanumeric code that identifies the type of incoming message. The alphanumeric code itself may be predefined either by the unified messaging system or by the subscriber if customization is desired. Preferably, the alert is sent to the subscriber's own number to alert the subscriber that an incoming message fitting the filtering

5 criteria has been received at the unified messaging system.

A facsimile receiving service 319 allows the user to receive facsimile at the unified messaging system if someone sends a facsimile to the subscriber's telephone number. Fig. 4 shows the communication options associated with the facsimile receiving service in greater detail. If the facsimile receiving option is enabled,

10 telephony server 126 will monitor for the facsimile tone and process the incoming message as a facsimile if the facsimile tone is detected. In one embodiment, the incoming facsimile is stored as a GIF or TIFF file that may be viewed by the subscriber through a web page by clicking on facsimile mail link 320. If the facsimile forward option 406 is also enabled, the facsimile will also be forwarded by the

15 outgoing facsimile server 204 to another facsimile machine at specified facsimile number 408, additionally or alternatively to storing a copy of the received facsimile at the unified messaging service. If the facsimile option is not enabled but the call forwarding option is enabled, the call is forwarded on and may be picked up by the forwarded device (if it is a functioning facsimile machine). If not, the incoming

20 facsimile will not be received.

A paging service 321 allows a message sent to the subscriber to be rerouted to a pager designated by the subscriber. Paging service 321 is preferably an on-demand service and allows the caller, if desired, to send a short message to a pager designated by the subscriber. The pager number designated by the subscriber may be designated

25 at location 404a (the paging service number) and, if required, using location 404b (the PIN number for the pager). If the paging service is enabled, a caller to the subscriber's telephone number will be given an option to send a short message to the pager subscriber pager (for example, by pressing a predefined key to send the short message). As noted before, the caller may also choose any of the other services

30 follow me service 308 and/or alternate number 312 if enabled. In this manner, a single telephone number may serve as the access point to receive a page, a voice message, a facsimile, etc.

For alphanumeric pagers with an email address, the outgoing page server may use text to describe the alert message (e.g., "you have a urgent voicemail from caller ID 4152222222 with return number 4153333333") instead of codes as in the case of numeric pagers. The outgoing pager server can then delegate the alert messages to the outgoing email server.

Voice mail messages that are stored may be listened to using either the computer (through an appropriate software/sound card) by clicking on voice mail link 330 (Fig. 3) or a telephone coupled to the telephony-centric network. E-mails that are sent to the subscriber using the subscriber's e-mail address may be read on-line by, for example, clicking on e-mail link 332 (Fig. 3). In one embodiment, telephone server 126 may be equipped with a text-to-speech facility to allow the subscriber to listen to the content of the e-mail message through a telephone. Fig. 3 also shows an outgoing e-mail link 334, which links the subscriber to an e-mail application program to allow the subscriber to compose and send out e-mail messages. In the case of replying an email via phone, a voice recording may be taken and sent as an email attachment.

As can be appreciated from the above examples, computer-implemented control center 302 provides a central visual interface that allows a subscriber to efficiently review and/or modify the communication option settings associated with the various communication services offered. This is in sharp contrast with time-consuming and burdensome prior art approaches whereby the person is required to contact different entities and deal with different accounts to change the communication options associated with different communication services.

In one embodiment, the computer-implemented control center has two views: the minimized view and the full view. In the minimized view (e.g., Fig. 3 in one embodiment), the computer-implemented control center may simply show the simplified routing details and the on-off settings associated with the communication options. Although the user may make changes to the on-off settings, fuller edit capabilities are preferably provided in the full view. In the full view (e.g., Fig. 4 in one embodiment), the computer-implemented control center additionally add explanations and detailed routing choices. If desired, an authentication procedure may be implemented with either the minimized view or the full view to ensure that the

person making editing changes to the communication options is properly authorized.

It should be appreciated that the communication services and options discussed in connection with Figs. 3 and 4 are only illustrative of the capabilities of the inventive computer-implemented control center. It should be apparent to those skilled in the art that the same control panel may be presented to the subscriber through the telephony server and the telephone interface if the subscriber wishes to review and/or change the communication options using a telephone connected to the telephony-centric network. The communication options may be presented in a sound format and the subscriber may be offered an option menu to review and/or change any communication option setting. Further, it should also be apparent to those skilled in the art that communication services options other than the preferred and discussed communication services and options can readily be controlled by the inventive computer-implemented control center. Irrespective of the services and options involved, a subscriber can access the centralized computer-implemented control center through either a computer connected to the data-centric network or a telephone connected to the telephony-centric network to review and/or change the communication options.

Fig. 5 is a flow diagram depicting, in one embodiment, the relevant steps of a computer-implemented process for handling access to the unified messaging system through the telephony-centric network by a subscribing or a non-subscribing caller. The subscriber may wish to access the unified messaging system to, for example, listen to stored voice mail messages or e-mail messages, to use the unified messaging system as a calling card service, or to review and/or modify the communication options. A non-subscribing caller may access the unified messaging system to, for example, send a facsimile, a page, or to call the subscriber. The first step 502 involves accessing the unified message system through a telephone using the subscriber's assigned telephone number. A set of two numbers may be assigned to a user, a local telephone number and a toll-free telephone number, both of which may be associated with a single user account.

The dialed digits reaches telephony server 126 via telephone link 128. Telephony server 126 then obtains the DNIS (direct number information service) by

digitizing the dialed digits (step 504) and employs the dialed digits to obtain the communication option settings associated with the account represented by the dialed telephone number (step 506). As mentioned earlier, these communication option settings reside in the subscriber communication profile database, which may be

5 managed by database server 120, in one embodiment. During this time, telephone server 126, through an appropriate interface board such as the aforementioned Dialogic board, monitors the incoming line for a facsimile tone or telephone key digit tone.

If no such facsimile tone or telephone key digit tone is detected (step 508), the

10 call is assumed to be a normal call to the subscriber and will be handled (in steps 510 and 512) in accordance with the communication option settings in the manner discussed earlier (e.g., forwarded if call forwarding is on, routed to an alternate number if the caller selects that option and alternate service is enabled, and the like).

On the other hand, if a facsimile tone is detected by telephony server 126, the

15 call will be handled as an incoming facsimile in accordance with the communication option settings (step 514). By way of example, if the facsimile receiving service is enabled, a copy of the facsimile will be stored for later retrieval by the subscriber. If the facsimile forwarding option is enabled, a copy of the facsimile is alternatively or additionally sent to the forwarded facsimile number.

On the other hand, if a keyed digit tone is detected by telephony server 126,

20 software within telephony server will handle the options chosen by the caller (step 516). By way of example, one option may represent the subscriber wishing to access the computer-implemented control center (via an appropriate key press) to review and/or change the communication options. In this case, telephony server 126

25 preferably serves up the account statistics, e.g., how many voice mail messages, facsimiles, e-mail messages, etc. are waiting and asks the caller for authentication as a subscriber. If there are none, the subscriber may wish to quickly hang up and not go through the authentication procedure (and extending the cost of the call). This, however, is an option and may be eliminated if privacy is a concern (that is,

30 authentication may take place before the presentation of account statistics).

Telephony server 126 may then obtain the authentication data from the caller (e.g., the password) and compare it with the subscriber account authentication data, which it obtains from the subscriber communication profile database in the database server. Authentication may be done via keyed digit entry or, in one embodiment, by

5 voice commands, which may then be translated to keyed digits by appropriate software. If authenticated, the subscriber may then be presented with a menu that allows the subscriber to review and/or change the communication options via key press or voice commands. Once the subscriber saves the changes, the changed communication option settings will be employed to handle future messages

10 transmitted and/or received through either the telephony-centric network or the data-centric network.

As one of the options, the subscriber may be given a choice (with proper authentication) to use the unified messaging system to originate an outgoing call. The choice may be made via, for example, a predefined key press or voice command. This

15 is useful in situations wherein the subscriber accesses his account at the unified messaging system through his toll-free number (e.g., from the airport or from someone else's telephone) and instructs the telephony server to connect his incoming call to an outgoing call to a provided destination telephone number and charges the cost to his account. In this manner, the unified messaging system may be employed as

20 a convenient calling card.

A keyed digit may also represent an on-demand service selection chosen by the caller. In this case, the caller simply presses an appropriate key when prompted and employs one of the on-demand services is then employed to handle his call. Various on-demand services have been discussed in connection with Figs. 3 and 4 and will not

25 be repeated here for the sake of brevity.

Fig. 6 is a flow diagram depicting, in one embodiment, the relevant steps of a computer implemented process for handling access to the unified messaging system by a subscriber through a data-centric network (such as the Internet in the example of Fig. 6). The subscriber may wish to access the unified messaging system to, for

30 example, listen to stored voice mail messages, view stored e-mail messages or facsimiles, send e-mail messages or facsimiles, or to review and/or modify the

communication options. The first step 602 involves accessing the unified messaging system web site, using a unified messaging system web address (e.g., "unifiedmessagingssystem.com"), with user computer 100 through a data-centric network 102.

5 The web site request connects to the web server 122 via data link 104 and network interface system 105. Following connection to the web site, the unified messaging system web server 122 serves up a login page using, for example, ASP-active server pages (step 604). The next step (step 606) includes entering authentication data such as a subscriber identifier (ID), e.g., username and password,
10 at the login page. The web server 122, after obtaining the authentication data, compares it with the subscriber account authentication data (step 608), which it obtains from the subscriber communication profile database from the database server. If authenticated, the subscriber may then be presented with a graphical menu of the communication options (step 610) that allows the subscriber to retrieve his
15 email/voicemail/fax messages, or review and/or modify the communication options via user computer 100 (step 612). Once the subscriber saves the changes (step 614), the modified communication option settings will be employed to handle future messages transmitted and/or received through either the telephony-centric network or the data-centric network.

20 Accordingly, the present invention provides a single centralized facility that gives a subscriber of various communication services (e.g., telephone, facsimile, pager, e-mail) the ability to review and modify his communication options (e.g., call forwarding, follow me service, alternate number, message alert, facsimile receiving, paging, routings and the like). This review and modification is done in an interactive
25 and simplified manner, via either the data-centric network or the telephony-centric network.

 The unified messaging system benefits a subscriber by integrating various communication services which up to now have existed as separate services. This is in sharp contrast to the prior art where the dual existence of the data-centric network and
30 the telephony-centric network has forced the service providers to manage communication options as separate accounts.

This integration simplifies management, billing, and more importantly the routing of messages among the various services. The unified messaging system gives the subscriber more control with regards to how the world communicates to the subscriber. For example, a subscriber may specify that an incoming facsimile be

5 forwarded to a computer for viewing or to a printer for printing, listen to e-mail messages through a telephone, receive pager notification when a facsimile is received, etc. The unified messaging system allows messages to be received, stored, retrieved, and/or forwarded without regard to the communication devices and/or networks employed for the transmission of the messages. In fact, the unified messaging system

10 even gives non-subscribers choices with its on-demand services associated with some of the communication options.

The unified messaging system advantageously removes the burden of managing different physical devices and different accounts. The subscriber no longer has to access multiple accounts to modify options. As mentioned previously, a person

15 who travels may wish to forward calls made from his home and office telephone numbers to his cellular telephone or hotel telephone. Likewise, he may wish to divert facsimiles sent to an office facsimile machine to a facsimile machine that is more local. While in a meeting, however, one may wish to temporarily divert the voice calls to a voice mail box or forwards it to another person for handling. To stay in

20 touch, these communication options may need to be changed many times during the course of the day and/or each time one arrives at a new location.

Using the present invention, a person need only access the unified messaging system either with a telephone or a computer. The communication options may then be modified as needed with a few key strokes. The subscriber has the ability to review

25 communication options at a single facility and no longer has to recall communication options from memory or contact each service provider.

Furthermore, the present invention advantageously allows remote access to the unified messaging system from any location that is connected to the data-centric network or the telephony-centric network. The subscriber no longer has to be

30 physically present at the forwarding origin to modify the forwarding option. This advantage leads to yet another advantage in that the unified messaging system may be

Also, the present invention advantageously allows the subscriber the
5 convenience of one telephone number (or two, including a toll-free 800 number).
Multiple number confusion is avoided by connecting multiple numbers through the
one number of the unified messaging system.

ITC-9903/ITC1P001

What is claimed is:

Sub B1
~~1.~~

5 A computer-implemented control center for permitting a subscriber of
 a plurality of communication services of a unified messaging system to customize
 communication options pertaining to said plurality of communication services, said
 communication options include parameters associated with individual ones of said
 plurality of said communication services and routings among said plurality of
 communication services, said plurality of communication services comprising a voice
 telephone service through a telephony-centric network and an e-mail service through a
 10 data-centric network, said communication options being accessible via display
 terminals coupled to said data-centric network and via telephones coupled to said
 telephony-centric network, said computer-implemented control center comprising:

15 a subscriber communication profile database, said subscriber communication
 profile database having therein an account pertaining to said subscriber, said account
 including said communication options for said subscriber;

20 a computer server coupled to exchange data with said subscriber
 communication profile database, said computer server being configured to visually
 display said communication options on one of said display terminals when said
 subscriber employs said one of said display terminals to access said computer-
 implemented control center, said computer server also being configured to receive
 from said subscriber via said one of said display terminals a first change to said
 communication options and to update said first change to said account in said
 subscriber communication profile database; and

25 a telephony server coupled to exchange data with said communication profile
 database, said telephony server being configured to audibly represent said
 communication options to one of said telephones when said subscriber employs said
 one of said telephones to access said computer-implemented control center, said
 telephony server also being configured to receive from said subscriber via said one of
 said telephones a second change to said communication options and to update said

second change to said account in said subscriber communication profile database.

2. The computer-implemented control center of claim 1 wherein said plurality of communication services include a facsimile service configured to permit said subscriber to receive at said unified messaging system a facsimile through said telephony-centric network and said telephony server, said communication options including a facsimile receiving enable option associated with said facsimile service.

~~3.~~ The computer-implemented control center as recited in claims ~~2~~
wherein said facsimile and said voice telephone service are both implemented using a
single telephone number.

~~4.~~ The computer-implemented control center of claim 1 further comprising:

15 a pager server coupled to exchange data with said communication profile database, wherein said communication services further include a pager alert service and wherein said communication options further include a pager alert option, said pager server being configured to transmit, when said pager alert option is enabled, an alert to a pager through said telephony-centric network if an e-mail message is
20 received by said subscriber through said data-centric network, said pager having a page number that is also specified as part of said pager alert option.

25 The computer-implemented control center of claim 1 wherein said plurality of communication services include a call forwarding service configured to permit said subscriber to specify whether a call received at a telephone number associated with said account be forwarded to a forwarding telephone number, said communication options including a call forwarding enable option and said forwarding telephone number.

4
6. The computer-implemented control center of claim 1 wherein said plurality of communication services include a follow me service, said communication options including a follow-me service enable option associated with said follow-me service and a set of telephone numbers, said follow-me service enable option when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call by said caller to a telephone associated with said set of telephone numbers.

5
7. The computer-implemented control center of claim 6 wherein said follow me service is configured to ring in sequence each one of telephones associated said set of telephone numbers until said call by said caller is accepted.

6
8. The computer-implemented control center of claim 7 wherein said follow-me service is configured to ring first a last-found telephone number, said last-found telephone number representing a telephone number associated with a phone previously employed by said subscriber to answer an immediately preceding call to said subscriber.

7
9. The computer-implemented control center of claim 1 wherein said plurality of communication services include an alternate number service, said communication options including an alternate number service enable option associated with said alternate number service and an alternate telephone number, said alternate number service enable option, when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call by said caller to an alternate telephone associated with said alternate telephone number.

Sub Q3

10. A computer-implemented method for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to said plurality of communication services, said communication options include parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services, said plurality of communication services comprising a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network, said communication options being accessible via display terminals coupled to said data-centric network and via telephones coupled to said telephony-centric network, said method comprising:

providing a subscriber communication profile database, said subscriber communication profile database having therein an account pertaining to said subscriber, said account including said communication options for said subscriber;

visually displaying said communication options on one of said display terminals, using a computer server coupled to exchange data with said subscriber communication profile database, when said subscriber employs said one of said display terminals to access said computer-implemented control center;

receiving from said subscriber via said one of said display terminals at said computer server a first change to said communication options, said first change to said communication options pertains to either said voice telephone service or said e-mail service;

updating said first change to said account in said subscriber communication profile database, thereby resulting in a first updated subscriber communication profile database, wherein subsequent messages to said subscriber at said unified messaging system, including said voice telephone service, are handled in accordance with said first updated subscriber communication profile database.

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11. The computer-implemented method of claim 10 further including:

providing a telephony server coupled to exchange data with said communication profile database;

audibly representing said communication options to one of said telephones, using said telephony server, when said subscriber employs said one of said telephones to access said computer-implemented control center;

receiving at said telephony server from said subscriber via said one of said telephones a second change to said communication options; and

updating said second change to said account in said subscriber communication profile database, thereby resulting in a second updated subscriber communication profile database, wherein subsequent messages to said subscriber at said unified messaging system, including said e-mail service are handled in accordance with said second updated subscriber communication profile database.

12. The computer-implemented method of claim 10 wherein said plurality of communication services include a facsimile service configured to permit said subscriber to receive at said unified messaging system a facsimile through said telephony-centric network and said telephony server, said communication options including a facsimile receiving enable option associated with said facsimile service.

13. The computer-implemented control center as recited in claims 11 wherein said facsimile and said voice telephone service are both implemented using a single telephone number.

14. The computer-implemented method of claim 10 further comprising: providing a pager server coupled to exchange data with said communication

profile database, wherein said communication services further include a pager alert service and wherein said communication options further include a pager alert option, said pager server being configured to transmit, when said pager alert option is enabled, an alert to a pager through said telephony-centric network if an e-mail message is received by said subscriber through said data-centric network, said pager having a page number that is also specified as part of said pager alert option.

15. The computer-implemented method of claim 10 wherein said plurality of communication services include a call forwarding service configured to permit said subscriber to specify whether a call received at a telephone number associated with said account be forwarded to a forwarding telephone number, said communication options including a call forwarding enable option and said forwarding telephone number.

16. The computer-implemented method of claim 10 wherein said plurality of communication services include a follow me service, said communication options including a follow-me service enable option associated with said follow-me service and a set of telephone numbers, said follow-me service enable option when enabled by said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call by said caller to a telephone associated with said set of telephone numbers.

17. The computer-implemented method of claim 16 wherein said follow me service is configured to ring in sequence each one of telephones associated said set of telephone numbers until said call by said caller is accepted.

18. The computer-implemented method of claim 17 wherein said follow-me service is configured to ring first a last-found telephone number, said last-found

telephone number representing a telephone number associated with a phone previously employed by said subscriber to answer an immediately preceding call to said subscriber.

5 19. The computer-implemented method of claim 10 wherein said plurality of communication services include an alternate number service, said communication options including an alternate number service enable option associated with said alternate number service and an alternate telephone number, said alternate number service enable option, when enabled by said subscriber, permits a caller to said
10 subscriber at said unified messaging system to elect to forward a call by said caller to an alternate telephone associated with said alternate telephone number.

15 20. A computer-implemented method for permitting a subscriber of a unified messaging system to customize communication options pertaining to a plurality of communication services of said unified messaging system, said communication options include parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services, said plurality of communication services comprising a voice telephone service and an e-mail service, said communication options being accessible
20 via display terminals coupled to a data-centric network and via telephones coupled to a telephony-centric network, said computer-implemented method comprising:

receiving, via either a first display terminal of said display terminals or a first telephone of said telephones, a request to access an account pertaining to said subscriber;

25 obtaining from a subscriber communication profile database said communication options for said subscriber in said account;

presenting said communication options for said subscriber on a respective one of said first display terminal and said first telephone from which said request to access is received;

receiving communication setting edits from said subscriber through said respective one of said first display terminal and said first telephone from which said request to access is received, said communication setting edits pertaining to said communication options; and

- 5 modifying said communication options in accordance with said communication setting edits, wherein said communication services are subsequently controlled in accordance with said communication options after said modifying.

- 17
21. The computer-implemented method of claim 14 wherein said plurality
10 of communication services include a call forwarding service, said receiving said communication edits includes receiving at least one of a call forwarding enable option associated with said call forwarding service and a forwarding telephone number associated with said call forwarding service, said call forwarding enable option, when enabled by said subscriber, forwards calls destined for said subscriber at said unified
15 messaging system to said forwarding telephone number, and wherein said modifying said communication options includes modifying a setting associated with said forwarding service in accordance with said at least one of said call forwarding enable option and said forwarding telephone number.

- 18
22. The computer-implemented method of claim 16 wherein said plurality
20 of communication services include a follow-me service, said receiving said communication edits includes receiving, as one of said communication setting edits, at least one of a follow-me service enable option associated with said follow-me service and a set of telephone numbers, said follow-me service enable option when enabled by
25 said subscriber, permits a caller to said subscriber at said unified messaging system to elect to forward a call by said caller to a telephone associated with said set of telephone numbers, and wherein said modifying said communication options includes modifying a setting associated with said follow-me service in accordance with said at least one of said follow-me service enable option and said set of telephone numbers.

add 26

**CENTRALIZED COMMUNICATION CONTROL CENTER AND
METHODS THEREFOR**

Abstract of the Disclosure

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Sub A1

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A computer-implemented control center for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the plurality of communication services. The communication options include parameters associated with individual ones of the plurality of the communication services and routings among the plurality of communication services. The plurality of communication services comprising a voice telephone service through a telephony-centric network and an e-mail service through a data-centric network. The communication options is accessible via display terminals coupled to the data-centric network and via telephones coupled to the telephony-centric network. The computer-implemented control center includes a subscriber communication profile database. The subscriber communication profile database has therein an account pertaining to the subscriber. The account includes the communication options for the subscriber. There is also included a computer server coupled to exchange data with the subscriber communication profile database. The computer server is configured to visually display the communication options on one of the display terminals when the subscriber employs the one of the display terminals to access the computer-implemented control center. The computer server also is configured to receive from the subscriber via the one of the display terminals a first change to the communication options and to update the first change to the account in the subscriber communication profile database. There is further included a telephony server coupled to exchange data with the communication profile database. The telephony server is configured to audibly represent the communication options to one of the telephones when the subscriber employs the one of the telephones to access the computer-implemented control center. The telephony server also is configured to receive from the subscriber via the one of the telephones a second change to the

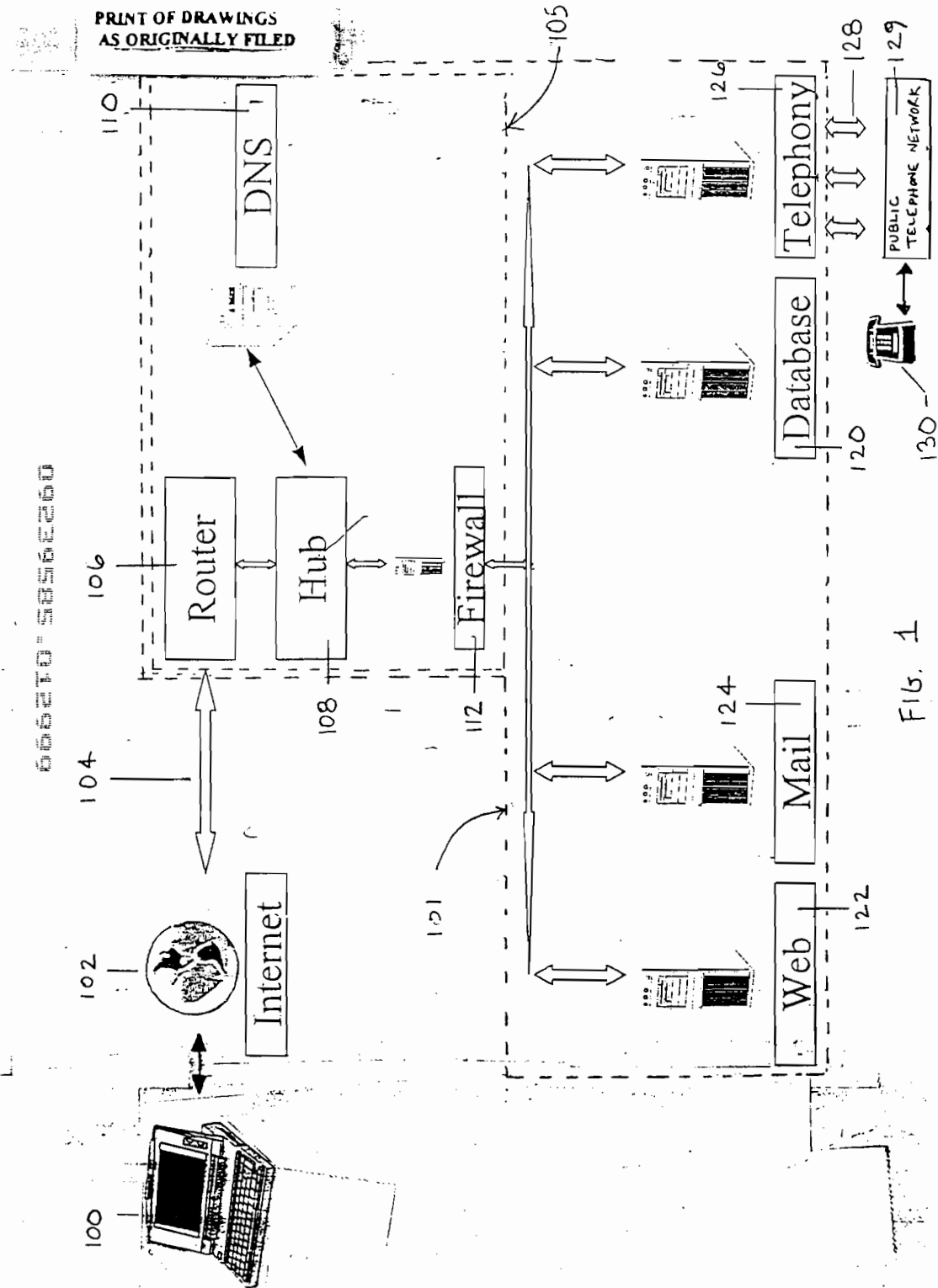


FIG. 1

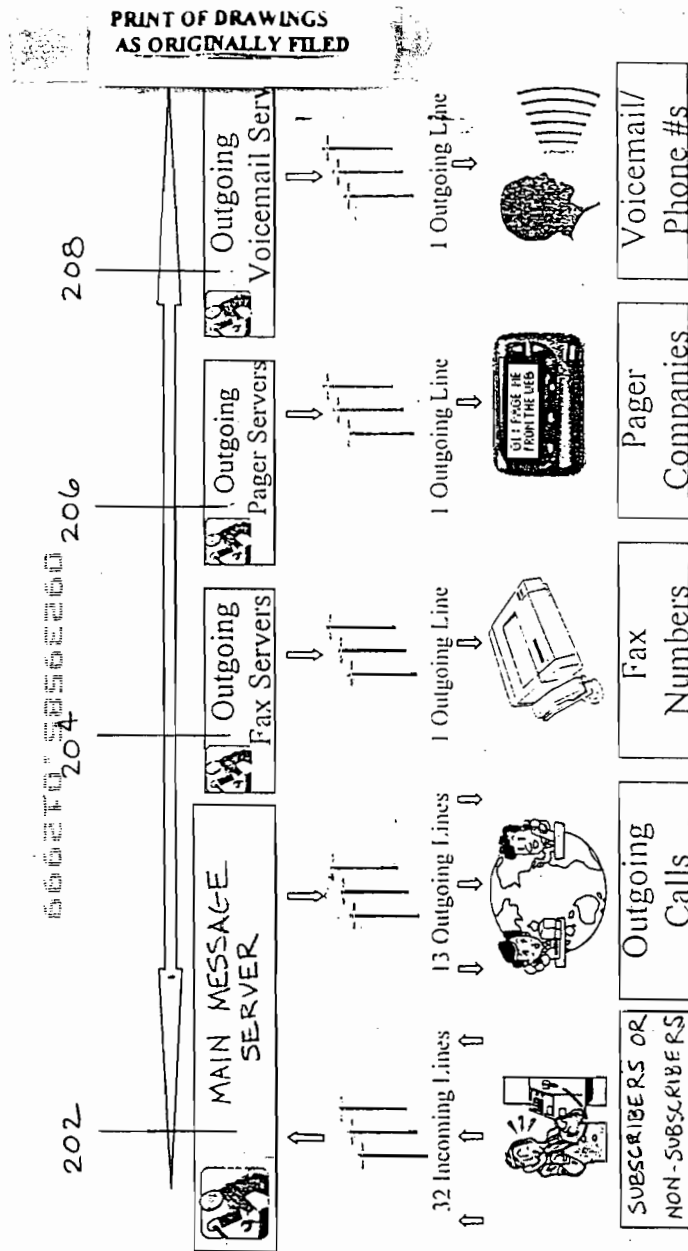


FIG. 2

PRINT OF DRAWINGS
AS ORIGINALLY FILED

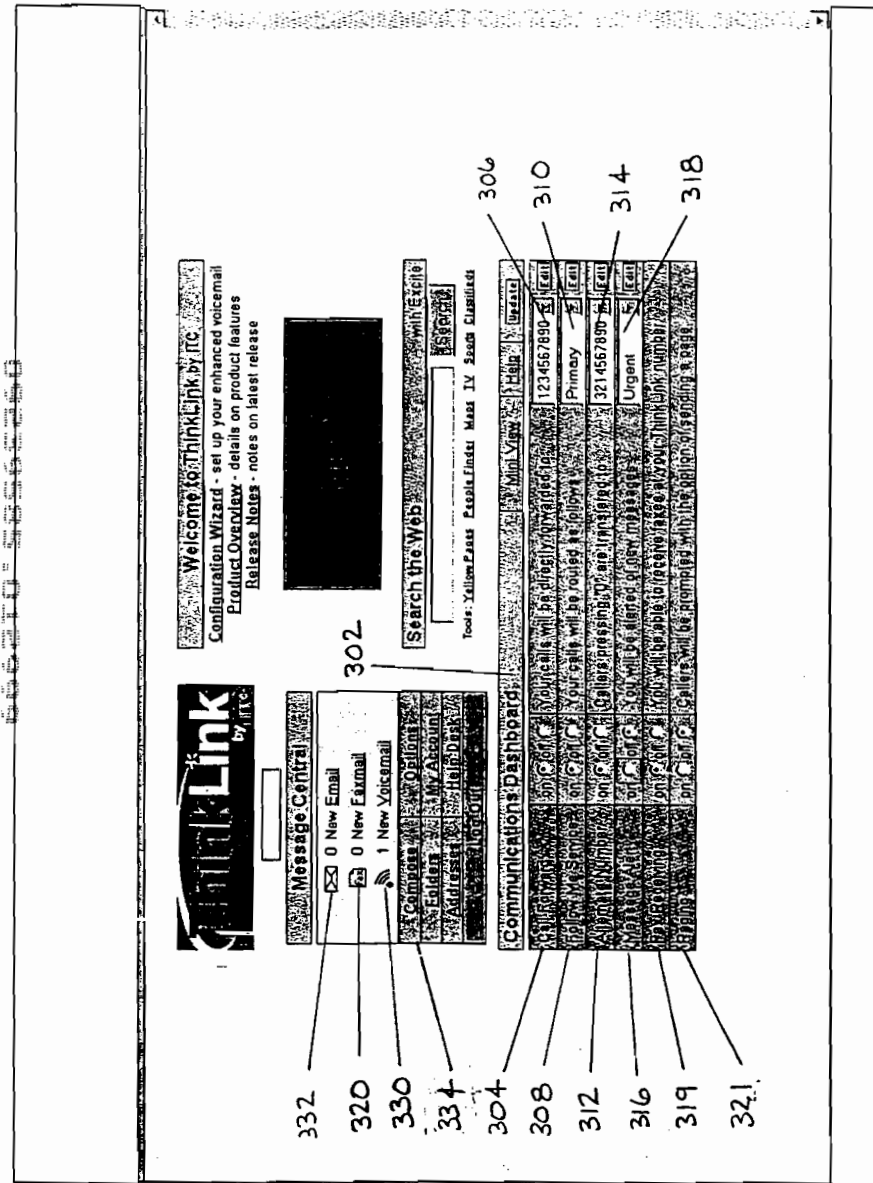


FIG. 3

PRINT OF DRAWINGS
AS ORIGINALLY FILED

304	308	306	319	406	408
<p>Print of Drawings</p> <p>Home Compose Folders Addresses Options My Account Help Desk Log Out</p> <p>Advanced Communication Settings</p> <p>Forward calls to (123) 456-7890 (00 Call) on off</p> <p>Follow Me call routing Primary Secondary</p> <p>1. (123) 456-7890 1. <input type="checkbox"/></p> <p>2. (123) 789-4560 2. <input type="checkbox"/></p> <p>3. (321) 123-4567 3. <input type="checkbox"/></p> <p>Override <input type="checkbox"/></p> <p>Forward faxes to (123) 456-7890 (00 Call) on off</p> <p>Send attempts 1 5</p> <p>Interval between attempts (min) 5</p> <p>Fax Sending</p> <p>You will be paged for:</p> <p>Includes:</p> <ul style="list-style-type: none"> -new voicemail -new faxes -new email (if the folders selected is right) <p><input type="checkbox"/> Inbox</p>					
321	312	314	404a	404b	316
<p>Advanced Communication Settings</p> <p>Forward calls to (123) 456-7890 (00 Call) on off</p> <p>Follow Me call routing Primary Secondary</p> <p>1. (123) 456-7890 1. <input type="checkbox"/></p> <p>2. (123) 789-4560 2. <input type="checkbox"/></p> <p>3. (321) 123-4567 3. <input type="checkbox"/></p> <p>Override <input type="checkbox"/></p> <p>Forward faxes to (123) 456-7890 (00 Call) on off</p> <p>Send attempts 1 5</p> <p>Interval between attempts (min) 5</p> <p>Fax Sending</p> <p>You will be paged for:</p> <p>Includes:</p> <ul style="list-style-type: none"> -new voicemail -new faxes -new email (if the folders selected is right) <p><input type="checkbox"/> Inbox</p>					

FIG. 4

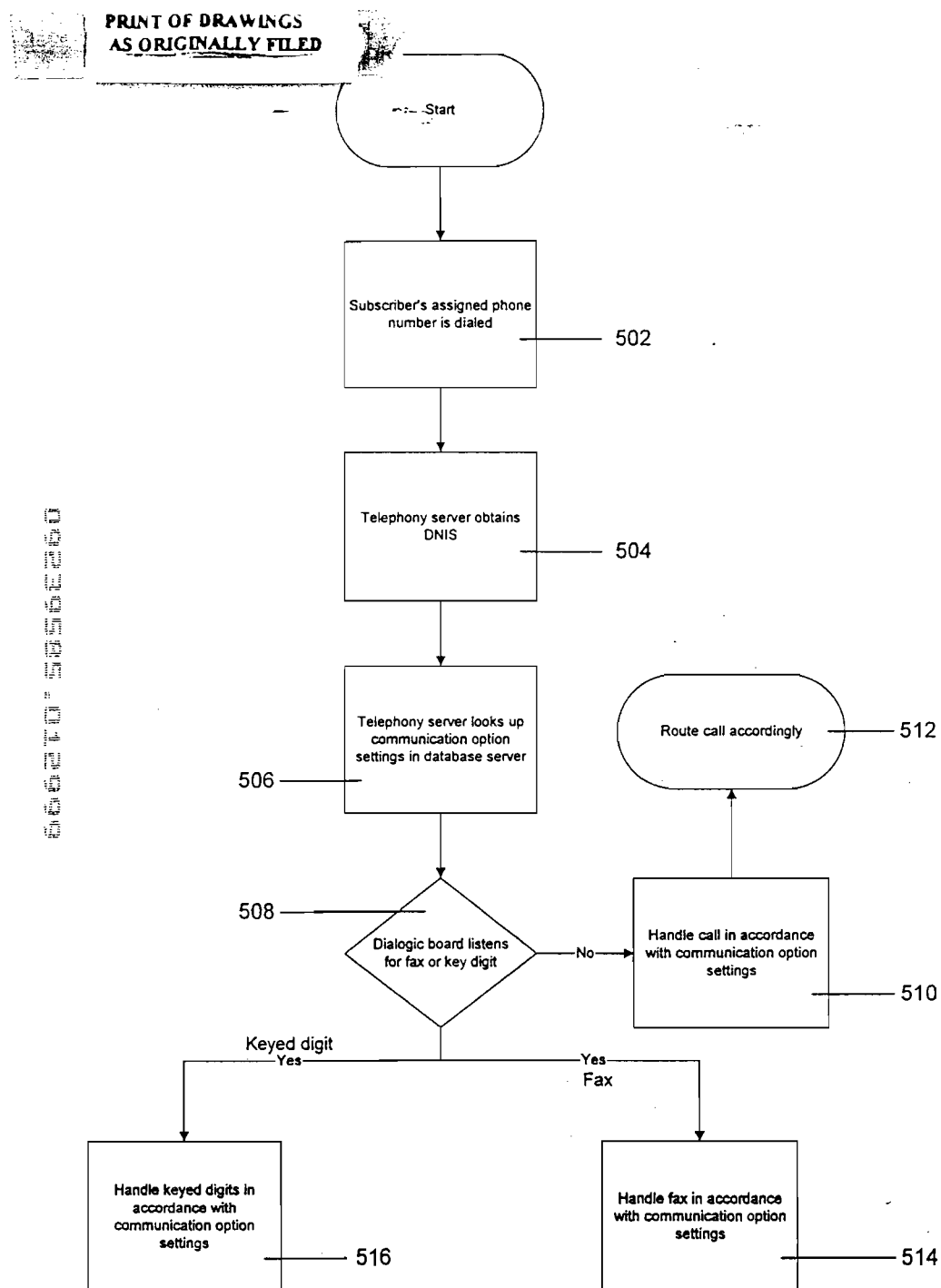


FIG. 5

PRINT OF DRAWINGS
AS ORIGINALLY FILED

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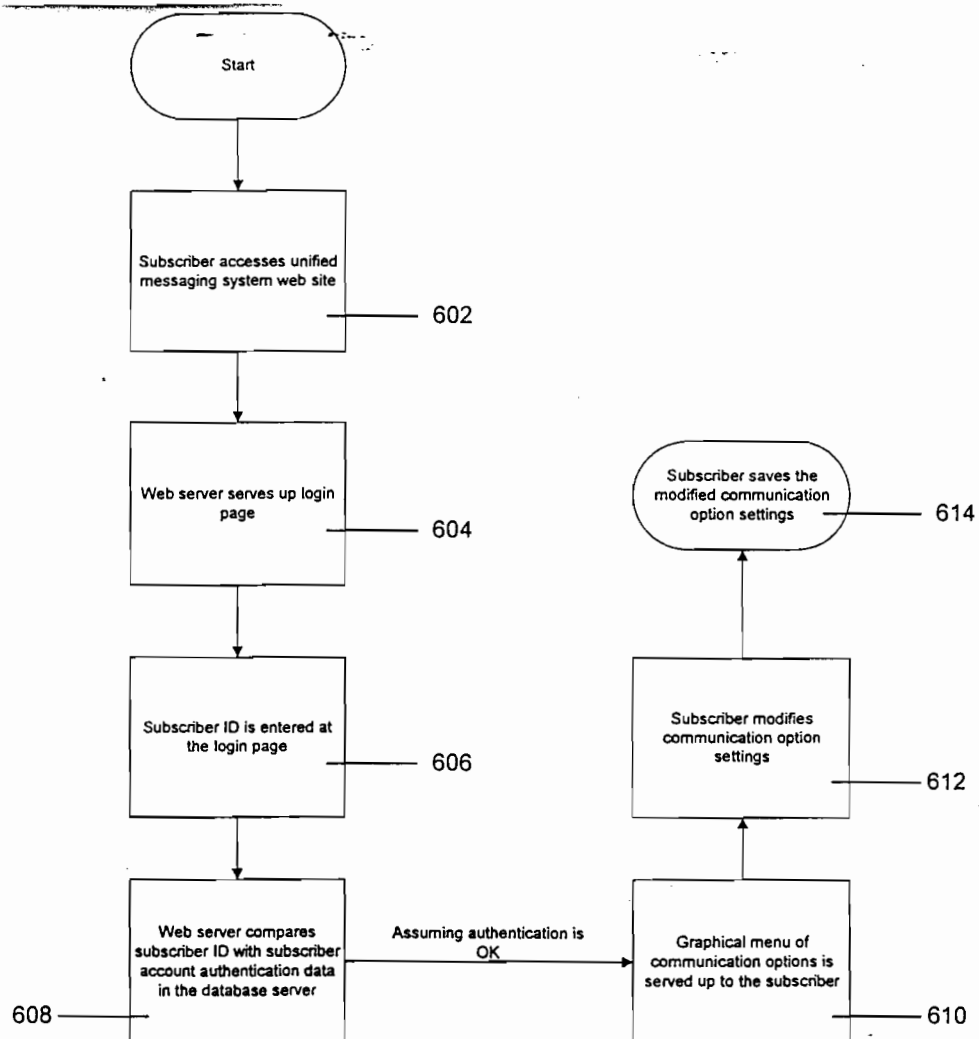


FIG. 6

Notice of Allowability	Application No.	Applicant(s)	
	09/239,585	O'NEAL ET AL.	
	Examiner	Art Unit	
	Roland G. Foster	2645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the telephone interview conducted on Jan. 29, 2001.

2. ☒ The allowed claim(s) is/are 1-20 (were 1-9, 20-22, 25-30, 32, and 37).

3. ☐ The drawings filed on _____ are acceptable as formal drawings.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____

5. ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE FOR SUBMITTING NEW FORMAL DRAWINGS, OR A SUBSTITUTE OATH OR DECLARATION. This three-month period for complying with the REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL is extendable under 37 CFR 1.136(a).**

6. ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

7. ☒ Applicant MUST submit NEW FORMAL DRAWINGS
(a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review(PTO-948) attached
1) ☐ hereto or 2) ☒ to Paper No. 5.
(b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the examiner.
(c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

8. ☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any reply to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE / SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

1 <input type="checkbox"/> Notice of References Cited (PTO-892) 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____. 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material	2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 4 <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No. _____. 6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9 <input type="checkbox"/> Other
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Application/Control Number: 09/239,585
Art Unit: 2645

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11/10

DETAILED ACTION
EXAMINER'S AMENDMENT

An extension of time under 37 CFR 1.136(a) is required in order to make an examiner's amendment which places this application in condition for allowance. During a telephone conversation conducted on Jan. 29, 2001, Quin C. Hoellwarth (Reg. No. 45,738) requested an extension of time for 1 MONTH(S) and authorized the Commissioner to charge Deposit Account No. 50-0388 (Order No. ITC1P001) the required fee of \$110.00 for this extension and authorized the following examiner's amendment. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Quin C. Hoellwarth (Reg. No. 45,738) on Jan. 29, 2001.

The application has been amended as follows:

Cancel claims 10-15, 17-19, ~~23~~, 24, and 33-36.

MSAL 01164

Application/Control Number: 09/239,585
Art Unit: 2645

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Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

The prior art of record fails to disclose or render obvious, alone or in combination, claims 1-9, 20-22, 25-30, 32, and 37.

The subject independent claim 1 is directed to permitting a subscriber of a unified messaging system to customize communication options. Specifically, the prior art of record fails to teach a unified messaging system having the following combination of additional features:

- 1) a subscriber communications profile database.
- 2) a computer server with a graphical display that displays a single graphical menu comprising a first display area for showing a first communication service and a first enable/disable option and a second display showing a second communication and a second enable/disable option where the first and second display area are displayed at the same time.
- 3) a telephony server that audibly represents said communication options to a telephone.

MSAL 01165

Application/Control Number: 09/239,585
Art Unit: 2645

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The subject independent claims 20 and 32 are also directed to permitting a subscriber of a unified messaging system to customize communication options. Specifically, the prior art of record fails to teach a unified messaging system having the following combination of additional features:

- 1) a subscriber communications profile database.
- 2) a computer server with a graphical display that displays a single graphical menu allowing the subscriber to select communications options: a) an on-demand communications enable option where the on-demand communication service permits a subscriber to the unified messaging system to forward a call or message to a forwarding number, and b) a forwarding number associated with the on-demand communication service.
- 3) a telephony server that audibly represents said communication options to a telephone.

Application/Control Number: 09/239,585
Art Unit: 2645

Page 5

The subject independent claim 37 is also directed to permitting a subscriber of a unified messaging system to customize communication options. Specifically, the prior art of record fails to teach a unified messaging system having the following combination of additional features:

- 1) a subscriber communications profile database.
- 2) a computer server with a graphical display that displays a single graphical menu comprising a first display area for showing a first communication service and an option and a second display showing a second communication and an option where the first and second display area are displayed at the same time.
- 4) where the first communication service and second communication service are selected from a call forwarding service, a follow me service, an alternate number service, a message alert service, a fax receiving service, or a paging service.
- 5) a telephony server that audibly represents said communication options to a telephone.

The previously applied prior art of record, Pepe et al. (U.S. Patent No. 5,742,905) is the closest prior art of record. Pepe discloses a unified messaging system having a subscriber communications profile database, a computer server with a graphical display, and a telephony server that audibly represents communication options to a

MSAL 01167

Application/Control Number: 09/239,585


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Art Unit: 2645

telephone. However, Pepe fails to disclose the specific options and the manner that they are displayed on the computer server as recited in the independent claims.

The remaining prior art of record fails to teach the above combination of specific display features not taught by Pepe or the obviousness of adding such a combination of specific display features.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


SCOTT L. WEAVER
PRIMARY EXAMINER
Art Unit 2645

MSAL 01168

Application/Control Number: 09/239,585
Art Unit: 2645

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roland Foster whose telephone number is (703) 305-1491. The examiner can normally be reached on Monday through Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan S. Tsang, can be reached on (703) 305-4895. The fax phone numbers for this group are (703) 308-6306 or (703) 308-6296.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

r.g.f. R.G.F.
January 30, 2001



SCOTT L. WEAVER
PRIMARY EXAMINER

Art Unit 2645

Exhibit 12

**CONTAINS CONFIDENTIAL BUSINESS INFORMATION
SUBJECT TO PROTECTIVE ORDER**

**UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE**

MICROSOFT CORP.,
Plaintiff,

v.

ALCATEL-LUCENT ENTERPRISE
and
GENESYS TELECOMMUNICATIONS
LABORATORIES, INC.,
Defendants.

Civil Action No. 07-090-SLR
Hon. Sue L. Robinson

EXPERT REPORT OF WILLIAM H. BECKMANN, PH.D.

**CONTAINS CONFIDENTIAL BUSINESS INFORMATION
SUBJECT TO PROTECTIVE ORDER**

**CONTAINS CONFIDENTIAL BUSINESS INFORMATION
SUBJECT TO PROTECTIVE ORDER**

the relevant art. I may address issues of claim construction in declarations supporting Microsoft's claim construction brief, at a claim construction hearing, and at trial, if necessary. Once the Court has construed the claims in this case, I reserve the right to modify or add to any opinions expressed in this report.

In assessing infringement, I understand that literal infringement of a patent claim requires that each limitation of the claim is present in the accused product. I also understand that indirect infringement of a patent claim requires that the indirect infringer have contributed to or induced another to directly infringe a patent claim.

Finally, I understand that, where literal infringement does not exist, infringement may still be found under the "doctrine of equivalents." I understand that a finding of infringement under the doctrine of equivalents requires the presence of an equivalent for each limitation not literally present in the accused product. I understand that a common test for equivalence is whether the equivalent element performs substantially the same function, in substantially the same way, to achieve substantially the same result as the claimed limitation.

VII. ORDINARY SKILL IN THE ART

With regard to the '064 and '357 patents, one of ordinary skill in the art in the 1999 timeframe would have had a bachelor's degree in electrical engineering, computer science, or a related field, with a minimum of three years of experience in designing or implementing unified communications systems.

With regard to the '439 and '289 patents, one of ordinary skill in the art in the 1999 timeframe would have had a bachelor's degree in electrical engineering, computer science, or a related field, along with a minimum of three years of experience in designing or implementing computer telephony systems.

**CONTAINS CONFIDENTIAL BUSINESS INFORMATION
SUBJECT TO PROTECTIVE ORDER**

VIII. CLAIM CONSTRUCTION

It is my understanding that the Court will interpret the asserted claims of the patents. I understand that I may provide relevant background information to assist the Court in understanding the technology at issue and in construing the asserted claims from the perspective of a person of ordinary skill in the relevant art. I have set forth below my opinions regarding the parties' initial proposed claim constructions. I understand that the parties have not yet provided the Court with their proposed claim constructions. I reserve the right to amend my opinions if the parties' initial proposed claim constructions change or after the Court issues its order on claim construction.

A. Claim Construction for the '064 and '357 Patents

1. "unified messaging system"

Microsoft proposes that the term "unified messaging system" should be construed to mean a "system that allows messages of a data-centric network and a telephony-centric network to be received, stored, retrieved, and forwarded without regard to the communication devices or networks employed for the transmission of the messages (*i.e.*, in a coordinated manner)." The '357 and '064 patents define "unified messaging system" as a system that "allows messages to be received, stored, retrieved, and/or forwarded...without regard to the communication devices and/or networks (*i.e.*, data-centric vs. telephony-centric) employed for the transmissions of the messages" and, therefore, support this construction. ['064 patent, col.6 ll.59-65]

Those skilled in the art of unified messaging systems in the late-1990s would have understood that a unified messaging system represents a central store for a user's messages (*i.e.*, it stores messages "without regard to the communication devices or networks employed for the transmissions of the messages"). The unified messaging system's store is maintained so that a user may retrieve messages using any one of his communication devices, and thus, a unified

**CONTAINS CONFIDENTIAL BUSINESS INFORMATION
SUBJECT TO PROTECTIVE ORDER**

messaging system has to be capable of receiving, storing, retrieving and forwarding messages in a coordinated manner. In other words, an action taken on a communication using any one of a user's communication devices needs to be reflected on all other devices that a user might use to access the communication via the centralized store. Defendants' proposed construction for this term does not make clear this coordination. Microsoft's proposed construction is more consistent with the understanding of those skilled in the art and should therefore be adopted.

2. "telephony-centric network"

I understand that Microsoft proposes that the term "telephony-centric network" should be construed to mean "network that carries telephony information primarily to facilitate information exchange among telephony devices including telephones, pagers, facsimile machines, voice mail boxes." This construction is consistent with the '064 and '357 patents. They describe a telephony-centric network as any network capable of connecting telephony communication devices and carrying telephony information such as voice, fax, pager, and the like. ['064 patent, col.1 ll.50-54; col.2 ll.5-12; col.9 ll.34-43.] The patents also incorporate by reference U.S. Patent Application Serial No. 09/240,367, which issued as U.S. Pat. No 6,411,685. ['064 patent, col.6 ll.35-42.] The '685 patent describes a telephony-centric network as a network that carries telephony information such as voice, fax, page messages, and the like, primarily to facilitate information exchange among telephony devices. ['685 patent, col.3 ll.41-44.]

3. "data-centric network"

Microsoft proposes that the term "data-centric network" should be construed to mean "network that carries digital data, primarily to facilitate information exchange among computers and computer peripherals" is consistent with the '064 and '357 patents. They describe a data-centric network as a network capable of connecting computers and carrying digital data. ['064 patent, col.1 ll.50-54; col.7 ll.31-38.] Both patents also incorporate by reference U.S. Patent

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Application Serial No. 09/240,367 which issued as U.S. Pat. No 6,411,685 (“the ’685 patent”). [’064 patent, col.6 ll.35–42.] The ’685 patent describes a data-centric network as a network that carries digital data, primarily to facilitate information exchange among computers and computer networks such as the Internet. [’685 patent, col.3 ll.37–40.]

4. “communication services”

Microsoft proposes that the term “communication services” should be construed to mean “services that facilitate communications via said telephony-centric or data-centric network.” It is my opinion that this construction is supported by the ’064 and ’357 patents. For example, claim 11 of the ’064 patent calls for a plurality of communication services that include “an e-mail service configured to permit said subscriber to receive and transmit e-mails through said data-centric network, and a voice telephone service configured to permit said subscriber to receive and transmit voice calls through said telephony-centric network.” [’064 patent, col.20 ll.5–11; *see also* ’357 patent, col.18 ll.12–22, col.19 ll.23–29; col.19 ll.32–42] This claim language makes clear that “communication services” refers to various services, including services provided over a data-centric network or services provided over a telephony-centric or both. There is no requirement in the O’Neal patents that “communication services” refers only to “services for communicating through *both* the telephony centric network *and* the data centric network,” as Defendants propose.

5. “communication options”

It is my understanding that Microsoft proposes that the term “communication options” should be construed to mean “settings that control how communication services will be handled.” The ’064 and ’357 patents explain that “[o]nce the subscriber saves the changes...the modified communication option settings will be employed to handle *future* messages transmitted and/or received through either the telephony centric network or the data-centric network.” [’064

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patent, col.17 ll.5–9 (emphasis added).] The surrounding words of the claims reinforce the fact that communication options are settings that control how future communications will be handled.

Claim 1 of the '357 patent, for example, recites

receiving from said subscriber...a first change to at least one of said communication options...updating said first change to said account in said subscriber communication profile database, thereby resulting in a first updated subscriber communication profile database, wherein *subsequent* messages...are handled in accordance with said first updated subscriber communication profile database.

['357 patent, col.18 l.61–col.19 l.6 (emphasis added).] It is also clear from the claim language of both patents that communication options modify the operation of communication services. [See, e.g., '064 patent, col.18 ll.32–36 (“said communication options for said subscriber, said communication options including parameters associated with individual ones of said plurality of said communication services and routings among said plurality of communication services”).]

Defendants’ proposed construction that the term “communication options” should be construed as “parameters associated with specific types of communication services” is vague and they do not explain what a “type” of communication refers to. Defendants’ construction ignores the explicit language in the claims and patent specifications explaining that communication options are settings that are applied to future communications and control the way future communications are handled. Defendants’ construction would cover functions and controls that apply only to past or current (real time) communications, rather than settings that apply to future communications. For example, the patents describe parameters associated with e-mail and voicemail services for listening to voicemail messages, reading e-mails, or composing e-mails. ['064 patent, col.14 ll.18–32.] However, the patents never describe these functions as communication options. Instead, the patents solely and consistently describe “communication options” as stored settings that apply to future communications.

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6. “e-mail service”

I understand that Microsoft proposes that the term “e-mail service” should be construed according to its plain and ordinary meaning to refer to a “communication service that includes receiving, storing, retrieving and forwarding emails.” The term “e-mail service” was well known to those skilled in the art around the time the ’064 and ’357 patents were filed. [’064 patent, col.2 ll.29–33] It is my opinion that the O’Neal patents use this term consistently with its well-understood meaning and as reflected in this proposed definition. [See ’064 patent, col.8 ll.31–55; col.8 ll.31–55, fig.3.]

7. “voice telephone service”

Microsoft proposes that the term “voice telephone service” should be construed to mean a “communication service that includes receiving, storing, retrieving and forwarding telephony information.” The ’064 and ’357 patents describe a telephony-centric network as connecting telephony devices, such as voice-oriented telephones and voice mail boxes in such a way that a user at one of the telephony devices can readily transmit information to other telephony devices. [’064 patent, col.2 ll.5–12.] The patents also explain that telephone lines may be employed to handle incoming/outgoing voice calls, the incoming voice mail messages, and the incoming facsimiles. [’064 patent, col.10 ll.1–7.] I agree with Microsoft’s position that the O’Neal patents use this term consistently with its well-understood meaning and as reflected in this proposed definition.

8. “enable option for enabling or disabling the first communication service, and wherein the second communication service includes a second enable option for enabling or disabling the second communication service

It is my opinion that Microsoft’s proposed construction that the phrase “enable option for enabling or disabling the . . . communication service” should be a “communication option that

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controls the extent to which a communication service is implemented” is supported by the ’064 and ’357 patents. They use the terms “enable” and “disable” more broadly than in the binary sense of switching a service on or off. The patent specifications do not equate the term “enable” with switching on or the term “disable” with switching off a service. For example, Figures 3 and 4 of the ’064 and ’357 patents illustrate several ways of enabling and disabling a service, including selecting an ON or OFF radio button and entering or deleting a telephone number in an appropriate field. In a more specific example, the paging service shown in Figure 4 of the patents will not be enabled if an appropriate PIN number is not entered in addition to a paging number. As yet another example, irrespective of whether the fax receiving service depicted in Figure 4 (shown as 319) is on or off, the included fax forwarding service can be independently enabled or disabled. Therefore, it is clear from the patents that certain features of a service can continue to function even though other features have been disabled. [See ’064 patent, col.13 ll.40–60.]

In contrast, Defendants argue that the enable option simply means “an option that allows a subscriber to turn on or off a communication service.” The ’064 and ’357 patents describe “on-off settings” [’064 patent, col.14 ll.46–49], but do not equate these on-off settings to the claimed enable option. Therefore, it is my opinion that Defendants’ proposed construction is incorrect.

**9. “a single graphical menu for displaying said communication options
for each of said communication services at the same time”**

Microsoft proposes that the phrase “a single graphical menu for displaying said communication options for each of said communication services at the same time” in claim 1 of the ’064 patent should be construed to mean “a single graphical menu for displaying at least a first communication service and option and a second communication service and option at the same time.” This construction is consistent with the surrounding language of the claim which

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further describes the single graphical menu: “wherein said single graphical menu comprises at least a first display area for showing a first communication service and a first communication option associated with said first communication service, and a second display area for showing a second communication service and a second communication option associated with said second communication service.” [’064 patent, col.18 ll.51–58.] This construction is also consistent with the O’Neal patents’ prosecution history. Defendants’ propose that this limitation should be construed to mean “one graphical menu that shows all of the communication options associated with the subscriber’s communication services.” However, claim 1 of the ’064 patent nowhere requires the display of all options associated with a subscriber’s communication services. Similarly, the specification does not describe any embodiments in which all options associated with a subscriber’s services are displayed. For example, figures 3 and 4 of the O’Neal patents do not display all options available to a subscriber. In addition, the prosecution history nowhere requires the display of all options associated with a subscriber’s communication options. Accordingly, it is my opinion that Defendants’ proposed construction is incorrect.

10. “audibly representing said communication options to one of said telephones using said telephony server, when said subscriber employs one of said telephones to access said computer-implemented control center”

It is my understanding that Microsoft proposes that the phrase “audibly representing said communication options to one of said telephones using said telephony server, when said subscriber employs one of said telephones to access said computer-implemented control center” in claim 1 of the ’357 patent should be construed to mean “audibly representing communication options pertaining to at least two communication services to a telephone using said telephony server, when a subscriber employs one of the telephones to access the computer-implemented control center.” The plain language of the claim calls for the audible representation of “said

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not recite or require that the options audibly represented via the telephony server be the same as the options displayed via the graphical interface as Defendants propose in their construction. Such a reading would be inconsistent with the patent specification, which in fact discloses several communication options that are available to a user via the telephony server but not the graphical user interface. For example, the specification identifies at least one option (*e.g.*, the option to place a phone call) that is disclosed as being available to a user via the telephony server, but does not appear on the graphical user interface shown in Figures 3 or 4. [*See* '064 patent, col.16 ll.16–26.]

12. Other Terms

I agree with Microsoft that the other terms in the asserted claims of the '064 and '357 patents should each be construed in accordance with their respective plain and ordinary meanings as understood by persons of ordinary skill in the art in the late 1990s, and do not require construction by the Court. I expressly reserve the right to comment on, and/or provide my own construction if Defendants or their expert(s) provide a construction for any of these or other terms.

B. Claim Construction for the '439 Patent

1. “telephone network”

I understand that Microsoft has proposed a construction for the term “telephone network” as recited in the claims of the '439 patent refers to be “network for carrying telephony information.” In my opinion this construction is consistent with the description of the term in the '439 patent specification, as well as the commonly-understood meaning of the term “telephone network” to persons of ordinary skill in the art in 1999. Defendants’ proposed construction is a “network for carrying telephony information originated by telephones.” Contrary to the construction proposed by Defendants, the '439 patent neither limits nor expressly defines a

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“telephone network” to be a network carrying telephony information from a particular source.

Rather the '439 patent treats this term as encompassing any type of network that carries telephony information. One of ordinary skill in the art during the relevant timeframe for the '439 patent would have understood that the term “telephone network” included any network carrying telephony information, without any particular limitation in regards to the source of the telephony information. Accordingly, Microsoft’s proposed construction for the term “telephone network” is supported by the '439 specification and accurately defines this term as it would have been understood by one of ordinary skill during the relevant timeframe. Additionally, for at least the reasons stated herein, it is my opinion that the construction proposed by Defendants is incorrect.

2. “computer network”

Microsoft has proposed the term “computer network” as recited in the claims of the '439 patent be construed “network for carrying digital data.” Microsoft’s construction is consistent with the specification of the '439 patent, as well as the commonly-understood meaning of the term “computer network” to persons of ordinary skill in the art in 1999. Defendants’ proposed construction is a “network for carrying digital data originated by computers.” Contrary to the construction proposed by Defendants, the '439 patent neither limits nor expressly defines a “computer network” to be a network carrying digital data from any particular source. Rather the '439 patent treats this term as encompassing any type of network that carries digital information, regardless of source. Thus, I agree that Microsoft’s proposed construction for the term “computer network” is supported by the '439 specification and accurately defines this term as it would have been understood by one of ordinary skill during the relevant timeframe. Additionally, for at least the reasons stated herein, it is my opinion that the construction proposed by Defendants is incorrect.

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a network carrying digital data from any particular source. Rather the '289 patent treats this term as encompassing any type of network that carries digital data, regardless of source. Moreover, one of ordinary skill in the art at the relevant timeframe for the '289 patent would have understood that the term "computer network" included any network carrying digital data, even if it was also capable of carrying telephony information. Thus, the construction proposed by Microsoft for the term "computer network" is supported by the '289 specification and accurately defines this term as it would have been understood by one of ordinary skill during the relevant timeframe. Additionally, for the reasons stated herein, I disagree with the construction proposed by Defendants.

3. "monitoring activity of a user computer"

I understand that Microsoft's proposed construction for the phrase "monitoring the activity of a user computer" as recited in the claims of the '289 patent is "monitoring the status of a user computer." This construction is consistent with the specification of the '289 patent. ['289 patent, col.2 ll.16–18, col.11 ll.54–62, col.14 ll.33–49, col.14 ll.53–56, col.16 ll.13–22, col.17 ll.19–25, col.19 ll.13–16.] Defendants' proposed construction limits activity of the computer to "active or idle" without explaining what they mean by "active or idle." Microsoft's proposed construction for the term "monitoring activity of a user computer" is supported by the '289 specification and accurately defines this term as it would have been understood by one of ordinary skill during the relevant timeframe. Additionally, for the reasons stated herein, it is my opinion that the construction proposed by Defendants is incorrect.

4. "information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party"

Microsoft's proposal that the phrase "information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the

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defines this term as it would have been understood by one of ordinary skill during the relevant timeframe. Additionally, for the reasons stated herein, it is my opinion that the construction proposed by Defendants is not supported by the '289 specification and does not accurately define this term as it would have been understood by one of ordinary skill during the relevant timeframe.

5. **“at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party”**

Defendants propose that this phrase be construed to mean “receiving at the computer network an indication from the telephone network that a first party requests to set up a telephone call with a second party prior to the time the call is placed by the first party.” This proposal is inconsistent with how the phrase would have been understood by one of ordinary skill during the relevant timeframe. Defendants’ proposal is improper at least because it uses the term “requests to set up a telephone call,” which has specific meaning in the art of telephony, to construe a term of general applicability—“desires to establish telephone communication.” One of ordinary skill during the relevant timeframe would not apply specific limits to a general term as Defendants suggest. Thus, it is my opinion that Microsoft’s proposal that this phrase should be construed according to its plain and ordinary meaning as understood by persons skilled in the art in 1999 is correct.

6. **“using the set of a pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party” and “pre-determined rules”**

Defendants propose that this phrase be construed to mean “a computer on the computer network using pre-set criteria relating to call filtering to process i) information received from the


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XI. FURTHER COMMENTS

My current opinions are set forth in this report. As my analysis and investigation of the case continues, I may acquire additional information and/or attain further insights relating to my opinions. I specifically reserve the right to supplement this opinion in response to any additional information that becomes available to me, any matters raised by Defendants and/or opinions provided by Defendants' expert(s), or in light of any relevant orders from the Court, including the Court's claim construction order. Moreover, I may make additions, deletions, or modifications that would be reflected in my trial testimony. For trial, I expect to prepare diagrams, charts, and demonstratives to illustrate the issues presented. I also understand that I may be asked to prepare a rebuttal report and to give rebuttal testimony at trial on matters not covered in this expert report.

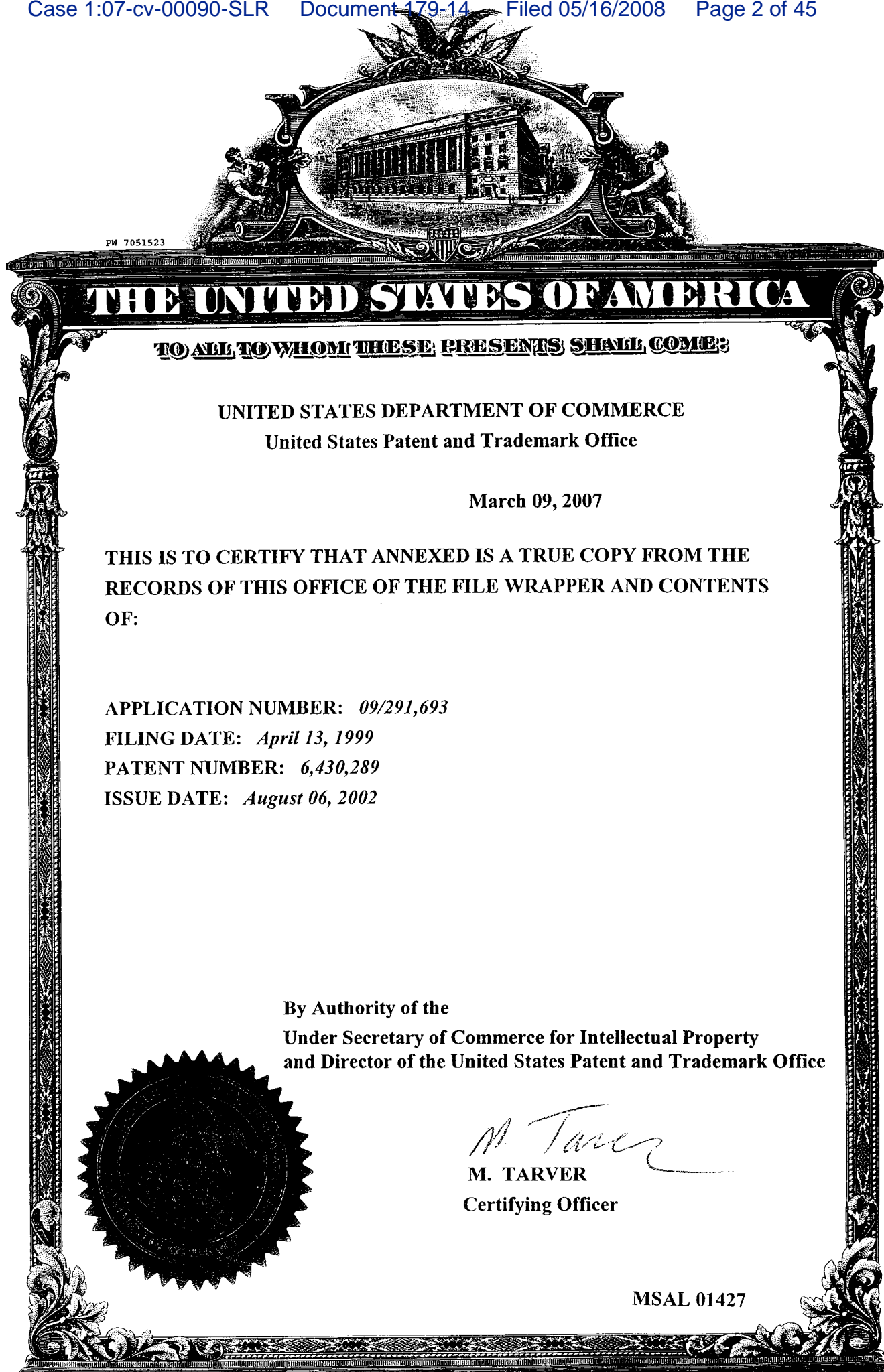
Date: _____

3/28/2008



William H. Beckmann

Exhibit 13



PW 7051523

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

March 09, 2007

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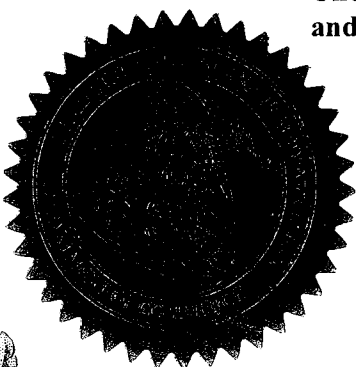
APPLICATION NUMBER: 09/291,693

FILING DATE: April 13, 1999

PATENT NUMBER: 6,430,289

ISSUE DATE: August 06, 2002

By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office



M. Tarver
M. TARVER
Certifying Officer

MSAL 01427

<p>O.I.P.E.</p> <p>SCANNED <i>mm-2</i> <i>[Signature]</i></p> <p>Q.A. <i>[Signature]</i></p>	<p>PATENT DATE</p> <p>AUG 06 2002</p>
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PREPARED AND APPROVED FOR ISSUE

7/9/02

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ISSUE FEE IN FILE

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SERIAL NUMBER 09/291,693	FILING DATE 04/13/99	CLASS 379	GROUP ART UNIT 2742	ATTORNEY DOCKET NO. 664005.455
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APPLICANT	STEPHEN MITCHELL LIFFICK, SEATTLE, WA.			
	<p style="text-align: center;">No</p> <p>**CONTINUING DOMESTIC DATA*****</p> <p>VERIFIED <u> </u></p>			
	<p style="text-align: center;">No</p> <p>**371 (NAT'L STAGE) DATA*****</p> <p>VERIFIED <u> </u></p>			
	<p style="text-align: center;">No</p> <p>**FOREIGN APPLICATIONS*****</p> <p>VERIFIED <u> </u></p>			

IF REQUIRED, FOREIGN FILING LICENSE GRANTED 04/30/99

Foreign Priority claimed 35 USC 119 (a-d) conditions met	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Met after Allowance	STATE OR COUNTRY WA	SHEETS DRAWING 10	TOTAL CLAIMS 58	INDEPENDENT CLAIMS 4
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Verified and Acknowledged Examiner's Initials Initials

ADDRESS	SEED AND BERRY LLP 6300 COLUMBIA CENTER SEATTLE WA 98104-7092			
	SYSTEM AND METHOD FOR COMPUTERIZED STATUS MONITOR AND USE IN A TELEPHONE NETWORK			

FILING FEE RECEIVED \$1,522	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT. NO. _____ for the following:	<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit MSAL 01429
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PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
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04/21/1999 KHARLING 00000057 09291693

01 FC:101	760.00 OP
02 FC:102	78.00 OP
03 FC:103	684.00 OP

PTO-1556
(5/87)

*U.S. GPO: 1998-433-214/80404

MSAL 01430

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PTO/SB/05 (2/98)

UTILITY PATENT APPLICATION TRANSMITTAL <small>(Only for nonprovisional applications under 37 CFR § 1.53(b))</small>		Attorney Docket No. 664005.455	
		First Inventor or Application Identifier Stephen Mitchell Liffick	
		Title SYSTEM AND METHOD FOR COMPUTERIZED STATUS MONITOR AND USE IN A TELEPHONE NETWORK	
		Express Mail Label No. EM330174913US	
APPLICATION ELEMENTS See MPEP chapter 600 concerning utility patent application contents.		ADDRESS TO: Box Patent Application Assistant Commissioner for Patent Washington, D.C. 20231	
1. <input checked="" type="checkbox"/> General Authorization Form & Fee Transmittal (Submit an original and a duplicate for fee processing)	2. <input checked="" type="checkbox"/> Specification [Total Pages] 46 (preferred arrangement set forth below) <ul style="list-style-type: none"> - Descriptive Title of the Invention - Cross References to Related Applications - Statement Regarding Fed sponsored R & D - Reference to Microfiche Appendix - Background of the Invention - Brief Summary of the Invention - Brief Description of the Drawings (if filed) - Detailed Description - Claim(s) - Abstract of the Disclosure 	6. <input type="checkbox"/> Microfiche Computer Program (Appendix)	7. Nucleotide and Amino Acid Sequence Submission (if applicable, all necessary) <ul style="list-style-type: none"> a. <input type="checkbox"/> Computer-Readable Copy b. <input type="checkbox"/> Paper Copy (identical to computer copy) c. <input type="checkbox"/> Statement verifying identity of above copies
3. <input checked="" type="checkbox"/> Drawing(s) (35 USC 113) [Total Sheets] 10	4. Oath or Declaration [Total Pages] 2 <ul style="list-style-type: none"> a. <input checked="" type="checkbox"/> Newly executed (original or copy) b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed) <ul style="list-style-type: none"> i. <input type="checkbox"/> <u>DELETION OF INVENTOR(S)</u> Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b) 	ACCOMPANYING APPLICATION PARTS	
5. Incorporation By Reference (useable if box 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein.	8. <input checked="" type="checkbox"/> Assignment Papers (cover sheet & document(s))		
	9. <input type="checkbox"/> 37 CFR 3.73(b) Statement (when there is an assignee) <input checked="" type="checkbox"/> Power of Attorney		
	10. <input type="checkbox"/> English Translation Document (if applicable)		
	11. <input type="checkbox"/> Information Disclosure Statement (IDS)/PTO-1449 <input type="checkbox"/> Copies of IDS Citations		
	12. <input type="checkbox"/> Preliminary Amendment		
	13. <input checked="" type="checkbox"/> Return Receipt Postcard		
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17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information below and in a preliminary amendment			
<input type="checkbox"/> Continuation <input type="checkbox"/> Divisional <input type="checkbox"/> Continuation-In-Part (CIP) of prior Application No.: _____			
Prior application information: Examiner _____ Group / Art Unit _____			
CORRESPONDENCE ADDRESS			
Michael J. Donohue Seed and Berry LLP 6300 Columbia Center/701 Fifth Avenue Seattle, Washington 98104-7092 (206) 622-4900 phone/(206) 682-6031 fax			

Respectfully submitted,

TYPED or PRINTED NAME Michael J. DonohueREGISTRATION NO. 35,859SIGNATURE Michael J. DonohueDate April 13, 1998

user/float/wendy/0400

MSAL 01431

EXPRESS MAIL NO. EM330174913US

1

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Stephen Mitchell Liffick
 Title : SYSTEM AND METHOD FOR COMPUTERIZED STATUS
 MONITOR AND USE IN A TELEPHONE NETWORK
 Docket No. : 664005.455
 Date : April 13, 1999

Box Patent Application
 Assistant Commissioner for Patents
 Washington, DC 20231

GENERAL AUTHORIZATION UNDER 37 C.F.R. § 1.136(a)(3)
AND FEE TRANSMITTAL

Sir:

With respect to the above-identified application, the Assistant Commissioner is authorized to treat any concurrent or future reply requiring a petition for an extension of time under 37 C.F.R. § 1.136(a)(3) for its timely submission as incorporating a petition therefor for the appropriate length of time. The Assistant Commissioner is also authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. 19-1090.

With respect to the above-identified application, the fee is calculated below:

For	Number filed	Number extra		Rate		
Basic Fee						\$ 760.00
Total Claims	58	38	X	\$ 18	=	\$ 684.00
Independent Claims	4	1	X	\$ 78	=	\$ 78.00
Assignment Fee					+	\$ 40.00
TOTAL						\$1,562.00

A check in the amount of \$1,562.00 is enclosed to cover the filing fee.

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The Assistant Commissioner is authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required, or credit any overpayment, to Deposit Account No. 19-1090. A duplicate copy of this request is enclosed.

Date April 13, 1999 Michael J. Donohue
Michael J. Donohue
Registration No. 35,859

MJD:ww

SEED and BERRY LLP
6300 Columbia Center
701 Fifth Avenue
Seattle, Washington 98104-7092
(206) 622-4900
FAX: (206) 682-6031

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EXPRESS L NO. EM330174913US

1

SYSTEM AND METHOD FOR COMPUTERIZED STATUS MONITOR AND USE IN A TELEPHONE NETWORK

TECHNICAL FIELD

The present invention is directed generally to telecommunications and,
5 more particularly, to a system and method for establishing a telephone
communication link using status reporting information from an independent
computer network.

BACKGROUND OF THE INVENTION

Telephone communication systems have increased in both size and
10 complexity. Early telephone systems required a human operator to manually
connect an originating telephone with a destination telephone. With the
introduction of automatic switching technology, the need for human operators to
connect each and every call disappeared. However, even automated switches did
not provide the wide range of features available on most telephone systems, such as
15 voicemail, caller identification, call waiting, call forwarding, three-way calling and
the like. Most telephone systems today include these features and allow the
customer to select one or more features to customize their telephone service. With
features such as voicemail, the telephone switching system must recognize when the
destination telephone is either busy or remains unanswered. If either of these
20 conditions occur, the calling party is routed to the voicemail service associated with
the destination telephone.

Despite these improvements, telephone systems are incapable of
determining when a particular recipient (*i.e.*, a callee) may be available to receive a
call. The caller has no choice but to place a call to the destination telephone and
25 hope that the callee answers. Alternatively, the caller may leave a voicemail
indicating a specific time at which the caller will place yet another call. This is an

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undesirable activity since it requires multiple calls, thus utilizing telecommunication capabilities in an inefficient manner. In addition, repeated or failed attempts to actually reach the callee are a waste of human resources since the parties must often call back and forth to each other a number of times before actually reaching the desired party. Therefore, it can be appreciated that there is a significant need for a system and method that can establish a telephone communication link when both parties are available to communicate. The present invention provides this and other advantages as will be apparent from the following detailed description and accompanying figures.

10 SUMMARY OF THE INVENTION

A system to specify user-selectable criteria for call processing is implemented on a telephone system, such as a public switched telephone network (PSTN). The user-specified call processing criteria is stored on a network that is accessible by the user for data entry and/or editing, and is also accessible by the PSTN to determine whether call processing criteria exists for the particular caller. The Internet provides a readily available data structure for storage of the user-selectable call processing criteria. The user can establish a database stored on the Internet in association with the user's telephone number and indicating the user-selectable call processing criteria for one or more potential callers.

The caller may be identified by caller identification data, such as automatic number identification (ANI). Based on the destination telephone number and the caller identification data, the PSTN accesses the Internet and examines an affiliation list corresponding to the destination telephone number. If the caller identification data is present in the affiliation list, the call may be processed in accordance with the user-specified criteria for that particular caller.

Both the caller and callee can specify user-selectable call processing criteria. The potential callee can specify call processing criteria for all incoming

calls, such as providing a list of individuals from whom the person will accept calls, a list of individuals from whom the person will not accept calls, or conditional criteria, such as accepting or blocking calls during certain times of day or during certain periods of activity, such as when the user may be otherwise occupied and
5 unwilling to accept an incoming call. In addition, the potential callee's computer activity may be monitored and the status of the computer as idle or active may be reported to the computer network. The caller indicates a desire to establish a communication link with the callee. The computer network accesses the caller's call processing criteria and the callee's call processing criteria. The call processing
10 criteria for both the caller and callee are analyzed and when all conditions are met, a telephone communication link is established between an originating telephone associated with the caller and a destination telephone associated with the callee.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a computer system that includes components to
15 implement the system of the present invention.

Figure 2 is a functional block diagram outlining the operation of the present invention.

Figure 3 is a functional block diagram of an alternate telecommunications configuration implementing the present invention.

20 Figure 4 is a functional block diagram of another alternative telecommunications configuration implementing the present invention.

Figure 5 is a functional block diagram providing details of the affiliation list of the system of Figure 2.

Figure 6 illustrates sample data provided in the list of Figure 5.

25 Figure 7 illustrates additional sample data provided in the list of Figure 3.

Figure 8 is a flowchart illustrating the operation of the system of Figure 2.

Figure 9 is a functional block diagram illustrating the system of the present invention to process a call in accordance with both a caller and callee call processing criteria.

Figure 10 is a flowchart illustrating the operation of the system of Figure 9.

DETAILED DESCRIPTION OF THE INVENTION

Existing telephone technology does not provide the telephone subscriber with a technique for controlling access to the user's telephone. Features such as caller ID identify the caller, but do not control access to the user's telephone. Thus, the conventional telephone system forwards the user to extreme options. The user may answer all incoming calls or may choose not to answer any incoming calls. However, the present invention provides selective options in between these two extremes. The present invention combines telephone technology with Internet technology to allow the user to "filter" incoming calls based on user-selected criteria. In particular, the user may establish a series of lists, stored on the Internet in association with the user's telephone, to filter incoming calls and thereby control access to the user's telephone. In addition, it is possible to monitor the activity or status of both a caller and a callee and establish a communication link between the caller's telephone and the callee's telephone when status data indicates that both are available for a telephone call.

Figure 1 and the following discussion are intended to provide a brief, general description of a suitable computing environment in which the invention may be implemented. Although not required, the invention will be described in the general context of computer-executable instructions, such as program modules, being executed by a personal computer. Generally, program modules include

With reference to Figure 1, an exemplary system for implementing the invention includes a general purpose computing device in the form of a conventional personal computer 20, including a processing unit 21, a system memory 22, and a system bus 23 that couples various system components including the system memory to the processing unit 21. The system bus 23 may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The system memory 22 includes read only memory (ROM) 24 and random access memory (RAM) 25. A basic input/output system 26 (BIOS), containing the basic routines that helps to transfer information between elements within the personal computer 20, such as during start-up, may be stored in ROM 24.

drive interface 35, respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer readable instructions, data structures, program modules and other data for the personal computer 20. Although the exemplary environment described herein employs a hard disk, a removable magnetic disk 30 and a removable optical disk 32, it should be appreciated by those skilled in the art that other types of computer readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROM), and the like, may also be used in the exemplary operating environment. Other I/O devices 27, such as a display 36, keyboard 37, mouse 38, and the like may be included in the personal computer 20 and function in a known manner. For the sake of brevity, other components, such as a joystick, sound board and speakers are not illustrated in Figure 1.

The personal computer 20 may also include a network interface 39 to permit operation in a networked environment using logical connections to one or more remote computers, such as a remote computer 40. The remote computer 40 may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to the personal computer 20, although only a memory storage device 42 has been illustrated in Figure 1. The logical connections depicted in Figure 1 include a local area network (LAN) 43 and a wide area network (WAN) 44. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, the personal computer 20 is connected to the LAN 43 through the network interface 39. When used in a WAN networking environment, the personal computer 20 typically includes a modem 45 or other means for establishing communications over the wide area network 44, such as the Internet. The modem 45, which may be internal or external,

permits communication with remote computers 46-50. In a networked environment, program modules depicted relative to the personal computer 20, or portions thereof, may be stored in the remote memory storage device 42 via the LAN 51 or stored in a remote memory storage device 52 via the WAN 44. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

The present invention is embodied in a system 100 illustrated in the functional diagram of Figure 2. In a typical telephone communication, an originating telephone 102 is operated by the caller to place a call to a destination telephone 104. The originating telephone generates signals that are detected by a central office switch 106 operated by a local exchange carrier (LEC) 108. The LEC 108 is the telephone service provider for the calling party. The originating telephone 102 is coupled to the central office switch 106 via a communication link 110. As those skilled in the art can appreciate, the communication link 110 may be a hard-wired connection, such as a fiber optic, copper wire, or the like. Alternatively, the communication link 110 may be a wireless communication link if the originating phone 102 is a cellular telephone or some other form of wireless telephone.

Similarly, the destination telephone 104 is coupled to a central office switch 116 operated by a local exchange carrier (LEC) 118. The destination telephone 104 is coupled to the central office switch 116 via a communication link 120. The communication link 120 may be a hard-wired communication link or a wireless communication link, as described above with respect to the communication link 110. The present invention is not limited by the specific form of communication link or central office switch.

The LEC 108 establishes a communication link with the LEC 118. As illustrated in Figure 2, the communication link between the LEC 108 and the LEC 118 is through a long distance carrier (LDC) 124. The LEC 108 establishes a

communication link 126 with the LDC 124 which, in turn, establishes a communication link 128 with the LEC 118. If the telephone call from the originating telephone 102 to the destination telephone 104 is not a long distance call, the LDC 124 is not required. In this case, the communication link 126 may couple the LEC 108 directly to the LEC 118. The use of the system 100 with other telephone configurations are illustrated in other figures.

To place a telephone call, the caller activates the originating telephone 102 to dial in the telephone number corresponding to the destination telephone number 104, thereby establishing the communication link 110 with the central office switch 106. In turn, the central office switch 106 establishes the communication link 126 (via the LDC 124, if necessary), thus establishing a communication link with the central office switch 116. In a conventional telephone system, the central office switch 116 establishes the communication link 120 to the destination telephone 104 causing the destination telephone to ring. If the callee picks up the destination telephone, a complete communication link between the originating telephone 102 and the destination telephone 104 has been established. This is sometimes referred to as "terminating" the telephone call. The specific telecommunications protocol used to establish a telephone communication link between the originating telephone 102 and the destination telephone 104 is well known in the art and need not be described herein. The preceding description of techniques used to establish the telephone communication link are provided only as a basis for describing the additional activities performed by the system 100.

With the system 100, the central office switch 116 does not initially establish the telephone communication link 120 with the destination telephone 104 to cause the telephone to ring. Instead, the central office switch 116 establishes a communication link 132 with a computer network 134, such as the Internet. As those skilled in the art can appreciate, the Internet is a vast multi-computer network coupled together by data links having various communication speeds. Although the

Internet 134 may use a variety of different communication protocols, a well-known communication protocol used by the Internet is a Transmission Control Protocol/Internet Protocol (TCP/IP). The transmission of data on the Internet 134 using the TCP/IP is known to those skilled in the art and need not be described in
5 greater detail herein.

The central office switch 116 utilizes conventional telephone communication protocols, which may be different from the TCP/IP communication protocols used by the Internet 134. The system 100 includes a communication interface 136 to translate data between the two communication protocols. The
10 communication interface 136 includes a telephone interface portion 138 and an Internet interface portion 140. The telephone interface portion 138 is coupled to the central office switch 116 via the communication link 132 such that communications occurring on the communication link 132 utilize the telephone communication protocol. The Internet interface portion 140 communicates via the Internet using
15 conventional communication protocols, such as TCP/IP.

The communication interface 136 may be implemented on a computing platform that functions as a server. The conventional components of the computing platform, such as a CPU, memory, and the like are known to those skilled in the art and need not be described in greater detail herein. The telephone
20 interface portion 138 may comprise an Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) to communicate with the central office switch 116. The ISDN PRI, which may be implemented on a plug-in computer card, provides information to the telephone interface portion 138, such as automatic number identification (ANI), dialed number identification service (DNIS), and the like. As
25 is known, ANI provides the telephone number of the caller's telephone (*e.g.*, the originating telephone 102) while the DNIS allows the number the caller dialed (*e.g.*, the destination telephone 104) to be forwarded to a computer system. These data may be considered "keys" which may be used by the system 100 to identify the

caller and the callee. Thus, the central office switch 116 provides information which may be used to access the affiliation list 150 for the destination telephone 104.

The Internet interface portion 140 may be conveniently implemented
5 with a computer network card mounted in the same computing platform that includes the ISDN PRI card. However, it is not necessary for satisfactory operation of the system 100 that the interface cards be co-located in the same computing platform. It is only required that the telephone interface portion 138 communicate with the Internet interface portion 140. The Internet interface portion 140 receives
10 the incoming data (e.g., the ANI, DNIS, and the like) and generates Internet compatible commands. The specific form of the Internet commands using, by way of example, TCP/IP, are within the scope of knowledge of one skilled in the art and need not be described herein. As will be described below, data provided by the central office switch 116 will be used to access data on the Internet and use that data
15 to determine the manner in which a telephone call will be processed.

The Internet 134 stores an affiliation list 150, which may be established by the user of the destination telephone 104. Data stored within the affiliation list 150 is accessed by the central office switch 116 to determine the manner in which the call from the originating telephone 102 will be processed.
20 Details of the affiliation list 150 are provided below. The Internet 134 also includes an Internet controller 152 which communicates with a callee computer 154 via a network link 156. The communication between the callee computer 154 and the Internet 134 is a conventional communication link used by millions of computers throughout the world. For example, the callee computer 154 may be a personal
25 computer (PC) containing a communication interface, such as a modem (not shown). The network link 156 may be a simple telephone communication link using the modem to communicate with the Internet 134. The Internet controller 152 functions in a conventional manner to communicate with the callee computer 154 via the

network link 156. Although the communication link 132 and the network link 156 are both communication links to the Internet, the network link 156 is a conventional computer connection established over a telephone line, a network connection, such as an Ethernet link, or the like. This conventional network link 156 is significantly
5 different from the communication link 132 between the central office switch 116 and the Internet 134. The central office switch 116 establishes the communication link 132 to access data on the Internet and uses that accessed data to determine how to process an incoming call for the destination telephone 104. The network link 156 is a computer-to-computer connection that may simply use a telephone as the
10 physical layer to establish the network link.

In the system 100, the central office switch 116 receives an incoming call from the originating telephone 102 via the central office switch 106 and, optionally, the LDC 124. Rather than immediately establishing the communication link 120 and generating a ring signal at the destination telephone 104, the central
15 office switch 116 establishes the communication link 132 and communicates with the Internet 134 via the communication interface 136. The purpose of such communication is to access the affiliation list 150 and thereby determine the manner in which the user of the destination telephone 104 wishes calls to be processed.

Figure 3 illustrates the system 100 for a telephone system
20 configuration in which the originating telephone 102 and the destination telephone 104 are both serviced by the same local exchange carrier 108. The originating telephone 102 establishes the communication link 110 with the central office switch 106 in the manner described above. The central office switch 106 establishes the communication link 126 directly with the central office switch 116 without the need
25 for the LDC 124 (see Figure 2). The central office switch 116 operates in the manner described above. That is, the central office switch 116 does not immediately establish the communication link 120, but does establish the communication link 132 with the Internet 134. For the sake of simplicity, Figure 3

does not illustrate the communication interface 136. However, those skilled in the art will appreciate that the central office switch 116 accesses the affiliation list 150 via the communication interface 136 (see Figure 2).

For the sake of simplicity, Figure 3 also does not show the Internet
5 controller 152 and the callee computer 154. However, those skilled in the art can appreciate that those portions of the system may also be present in the embodiment illustrated in Figure 3. However, it should be noted that the callee computer 154 and the Internet controller 152 need only be used to edit the affiliation list 150. The call processing by the central office switch 116 does not depend on the presence of
10 the Internet controller 152 or the callee computer 154. That is, the central office switch 116 accesses the affiliation list 150 via the communication interface 136 regardless of the presence of the callee computer 154.

In yet another telephone system configuration, illustrated in Figure 4,
the originating telephone 102 and the destination telephone 104 are not only
15 serviced by the same local exchange carrier 108, but are connected to the same central office switch 116. However, the fundamental operation of the system 100 remains identical to that described above with respect to accessing the affiliation list 150. That is, the originating telephone 102 establishes the communication link 110 with the central office switch 116. However, the central office switch 106 need not
20 establish the communication link 126 with any other central office switch since the destination telephone 104 is also connected to that same central office switch.

In this telephone system configuration, the central office switch 116 accesses the affiliation list 150 on the Internet 134 via the communication link 132 (see Figure 2) in the manner described above. For the sake of simplicity, Figure 4
25 does not illustrate the communication interface 136. However, those skilled in the art will recognize that the communication interface 136 operates to convert communication signals between telephone protocol used by the central office switch 106 and the Internet communication protocol used by the Internet 134. In addition,

Figure 4 also does not illustrate the Internet controller 152 and the callee computer 154. As noted above with respect to Figure 3, the Internet controller 152 and callee computer 154 are not necessary for proper operation of the system 100. The callee computer 154 is typically used in the system 100 to edit the affiliation list 150.

5 The affiliation list 150 is illustrated in greater detail in the functional block diagram of Figure 5. The affiliation list comprises a series of sublists, illustrated in Figure 3 as a forward list 160, a reverse list 162, a block list 164, and an allow list 166. The forward list 160 contains a list of Internet subscribers whose Internet activity a user wishes to monitor. This list is sometimes referred to as a
 10 "buddy" list. When the user operates the callee computer 154 on the Internet 134, the Internet controller 152 accesses the forward list 160 via an affiliation list input/output (I/O) interface 170 to determine which Internet subscribers contained within the forward list are currently active on the Internet 134. In conventional Internet operation, the Internet controller 152 sends a message to the callee
 15 computer 154 indicating which Internet subscribers on the forward list 160 are currently active on the Internet 134.

The forward list 160 is a list of Internet subscribers whose activity is reported to the user. Other Internet subscribers may have their own forward list (not shown) and may monitor the Internet activity of the user. When the user accesses
 20 the Internet 134 with the callee computer 154, that activity can be monitored by others. With the system 100, it is possible to determine who is monitoring the user's Internet activity. The reverse list 162 contains a list of Internet subscribers who have placed the user in their forward list. That is, the reverse list 162 contains a list of Internet subscribers who have placed the user in their buddy list. With the
 25 reverse list 162, the user can determine who is monitoring his Internet activity.

The block list 164 contains a list of Internet subscribers that the user does not want to monitor his Internet activity. That is, the user's Internet activity will not be provided to any Internet subscriber contained in the block list 164. Thus,

even if a particular Internet subscriber has placed the user on their forward list, the presence of that particular Internet subscriber's name on the block list 164 will prevent the user's Internet activity from being reported to the particular Internet subscriber. The use of the block list 164 provides certain security assurances to the user that their Internet activity is not being monitored by any undesirable Internet subscribers.

The allow list 166 contains a list of Internet subscribers for whom the user may wish to communicate with but whose Internet activity the user does not wish to monitor.

10 The system 100 combines the capabilities of the affiliation list 150 with telephone switching technology to filter incoming calls to the destination telephone 104. For example, the user may specify that only calls from Internet subscribers contained in the forward list 154 may contact the user via the destination telephone 104. Alternatively, the user may specify that a calling party whose name
15 is contained in the forward list 160 or the allow list 166 may place a call to the destination telephone 104. As will be discussed in greater detail below, the system 100 allows the user to create general conditional processing, such as blocking calls or allowing calls. However, the user can also create specific conditional processing for individual callers or based on the user's current status or preferences.

20 The central office switch 116 accesses the affiliation list 150 via the communication link 132 and determines whether the calling party is in a list (e.g., the forward list 160) that the user wishes to communicate with. If the calling party is contained within an "approved" list, the central office switch 116 establishes the communication link 120 and sends a ring signal to the destination telephone 104.
25 Thus, the user can pick up the telephone with the knowledge that the calling party is an individual with whom the user wishes to communicate.

Conversely, if the calling party is not contained within an approved list, such as the forward list 160 or the allow list 166, the central office switch 116

will not establish the communication link 120 with the destination telephone 104. Thus, the user will not be bothered by undesirable phone calls. In one embodiment, the central switch office simply will not establish the communication link 120 and the calling party will recognize that the call did not go through. Alternatively, the central office switch 116 may generate a signal indicating that the destination telephone 104 is busy. In this alternative embodiment, the calling party will receive a busy signal on the originating telephone 102. Thus, the user has the ability to filter incoming calls by creating a list of those individuals with whom the user wishes to communicate.

It should be noted that the affiliation list 150 may be dynamically altered by the user to add or delete individuals, change individuals from one list to another, or to change the call processing options for a particular list depending on the user's preferences. For example, the user may want to accept all calls from any source at certain times of the day. Under these circumstances, the user can edit the allow list 166 to accept calls from any calling party. Alternatively, the user may still maintain the block list 164 such that calls will not be processed from certain specified parties even if the user is willing to accept calls from any other source. Under other circumstances, the user may not wish to communicate with any individuals. In this instance, the user may indicate that all calling parties are on the block list 164. Thus, the central office switch 116 will access the Internet 134 in real-time and review data in the affiliation list 150 to thereby process incoming calls for the user in accordance with the rules present in the affiliation list.

The discussion above provides examples of the central office switch 116 processing calls from a calling party in accordance with their presence or absence of certain lists in the affiliation list 150. For example, a call from a party on the forward list 160 will be connected to the destination telephone 104 (see Figure 2) while a call from a party on the block list 164 will not be put through to the destination telephone. However, the system 100 also allows the selection of call

processing options on an individual basis rather than simply on the presence or absence in a particular list. For example, the user can edit the allow list 166 to specify that certain individuals are "allowed" while other individuals may be allowed, conditionally allowed, or blocked all together. If the individual calling
5 party has an associated status indicating that they are allowed, the central office switch 116 will process the incoming call and connect it to the destination telephone 104. If the individual calling party has an associated blocked status, the central office switch 116 will not process the call and will not connect it to the destination telephone 104.

10 Furthermore, the user may attach conditional status to individual callers or to calling lists. Conditional status may be based on factors, such as the time of day, current availability of the user, work status, or the like. For example, the user may accept calls from certain work parties during specified periods of the day (*e.g.*, 9:00 a.m. - 11:00 a.m.), block calls from selected calling parties during
15 other periods of time (*e.g.*, 12:00 - 1:00 p.m.), or allow calls during a business meeting only from certain calling parties (*e.g.*, the boss). These conditional status criteria may be applied to individuals or to one or more lists in the affiliation list 150.

Figure 6 illustrates sample data entries in the allow list 166. The
20 allow list 166 may include data, such as a name, Internet subscriber name, and one or more phone numbers associated with the individual data entry. It should be noted that the calling party need not have an Internet subscriber name for proper operation of the system 100. That is, the central office switch 116 accesses the allow list 166 utilizing the calling party number and need not rely on any email addresses or other
25 Internet subscriber identification for proper operation. The allow list 166 may also include an email alias in addition to or in place of the Internet subscriber name. Some Internet subscribers prefer to "chat" with other subscribers utilizing an alias rather than their actual Internet subscriber name. The data of Figure 6 illustrates one

possible embodiment for the allow list 166. However, those skilled in the art can appreciate that the allow list 166 may typically be a part of a large database (not shown). Database operation is well known in the art, and need not be described in greater detail herein. The database or other form of the forward list 160 may be satisfactorily implemented using any known data structure for storage of data. For example, the various lists (*e.g.*, the allow list 166, the reverse list 162, the block list 164 and the allow list 166) may all be integrated within a single database structure. The present invention is not limited by the specific structure of the affiliation list 150 nor by the form or format of data contained therein.

10 Rather than incoming call filtering on the basis of presence in a particular list, such as the allow list 166, as illustrated in Figure 6, the affiliation list 150 may contain status data on an individual basis. In this event, the central office switch 116 (see Figure 2) processes the incoming call in accordance with the designated status for that individual. In the example illustrated in Figure 7, the affiliation list 150 contains one individual with an "allowed" status, one individual with a "blocked" status, and one individual with a "conditional" status based on user-selected criteria. In the example of Figure 7, the user-selected criteria may be based on the particular phone from which the call is originating as well as the time of day in which the call is originated. For example, the user may wish to allow all calls from a particular number, such as an caller's work number. However, calls from another number, such as the caller's home phone, may be blocked. Other calls, such as from a caller's cellular telephone, may be allowed only at certain times of day. Figure 7 is intended to illustrate some of the call processing options that are available to the user. As can be appreciated, a variety of different conditional status criteria may be applied to one or more potential calling parties. However, a common feature of the system 100 is that the telecommunication system (*e.g.*, the central office switch 116) determines calling party status on the basis of information stored on the Internet and processes the incoming call in accordance

with the user-specified criteria. Moreover, the system 100 operates in real-time to process the incoming call in accordance with the user-specified criteria.

The Internet 134 may be conveniently used as a storage area for the caller specified criteria. The advantage of such data storage on the Internet is that the data is widely accessible to the user. This provides a convenient mechanism for entering new caller data or editing existing caller data. The user can access the affiliation list 150 with the callee computer 154 via the network link 156. In contrast, the central office switch 116 may access the affiliation list 150 via the communication link 132, which may typically be a high-speed communication link. In addition, Figures 2, 4, and 5 illustrate the central office switch 116 as the telecommunication component that accesses the Internet 134. It is convenient for operational efficiency to have the central office switch (e.g., the central office switch 116) to which the destination telephone 104 is connected perform such Internet access. It is at this stage of the telephone call processing that the telecommunication system may most conveniently determine the user-specified caller status. However, those skilled in the art will recognize that the status check may be performed by other portions of the telecommunication system, such as the central office switch 106, the LDC 124, or the like. Thus, the present invention is not limited by the particular telecommunication component that establishes the communication link with a network which the user-specified caller status data is stored.

In addition, the system 100 can be readily implemented as an "add-on" component of the telecommunication system and need not be integrated with the central office switch 116. For example, the conventional central office switch provides the ability to divert calls based on certain call conditions, such as "Call Forward No Answer," which may be used to divert an incoming call to voicemail or "Call Forward Busy," which may also divert the incoming call to voicemail. To implement the system 100 with an add-on processor, the system may optionally

include a Switch to Computer Applications Interface (SCAI) 174 and a call processor 176. The dashed lines of Figure 4 are intended to illustrate an alternative configuration of the system 100. This alternative configuration can also be implemented with other telephone system configurations, such as illustrated in
5 Figures 2 and 3. The SCAI 174 is a telecommunication protocol that allows switches to communicate with external computers. Data, such as caller and callee telephone numbers, and status information, such as Call Forward Busy, are provided to the SCAI 174 by the central office switch 116.

The call processor 176 performs the functions described above to
10 process the call in accordance with the user-specified criteria. That is, the call processor 176 receives caller and callee data from the SCAI 174 and accesses the affiliation list 150 via the communication interface 136 (see Figure 2). The call processor 176 uses user-specified call processing criteria to generate instructions for the central office switch 116. The instructions are provided to the central office
15 switch 116 via the SCAI 174. Those skilled in the art will appreciate that the SCAI 174 is but one example of the Open Application Interface (OAI) that can be used with the central office switch 116.

As noted above, the system 100 can process a call intended for the destination telephone 104, block a call, or generate a busy signal at the originating
20 telephone 102. However, the system 100 also operates with voicemail and permits a number of different customized outgoing messages. Figure 4 illustrates a voicemail system 180 having a storage area containing one or more outgoing messages 182. For example, the voicemail system 180 can play an outgoing message 182 informing the caller that "the party you are calling only accepts calls from designated callers.
25 Please leave a message." If calls are blocked only at certain times, the outgoing message 182 can say "the party you are calling does not accept calls between 11:30 a.m. and 1:00 p.m. Please leave a message or call back after 1:00 p.m." The outgoing message can also reflect callee availability by playing a message such as

“The party you are calling is in a meeting. Please leave a message or call back in X minutes” where X reflects the amount of time before the meeting is expected to end. That information can be manually provided to the affiliation list 150 by the user or automatically derived from a computerized scheduling program on, by way of
5 example, the callee computer 154 (see Figure 2).

Computerized scheduling programs, such as Microsoft® Schedule Plus, can be used on the callee computer 154 (see Figure 2). It is known that such scheduling programs can be accessed via a computer network or downloaded to a hand-held computing device to track appointments. The system 100 can access such
10 computerized scheduling programs and download appointments and scheduled meetings into the affiliation list 150. The outgoing messages 182 can be automatically selected on the basis of the user’s computerized schedule. Thus, the system 100 permits the user to schedule his day (e.g., meetings, lunch time, in office/available for calls, in office/unavailable for calls, etc.) on a computerized
15 scheduling program and to process calls in accordance with the computerized schedule and even select outgoing messages automatically based on the user’s schedule.

The operation of the system 100 is illustrated in the flowchart of Figure 7. At a start 200, the calling party has placed a call from the originating
20 telephone 102 (see Figure 2) to the destination telephone 104. In step 202, the central office switch 116 has received call data from the originating telephone 102. The received call data includes the destination telephone number of the destination telephone 104 and identification data indicating the originating telephone 102 as the source of the present call. Use of automatic number identification (ANI) is a well-
25 known technique for providing identification data indicating the originating telephone 102 as the source of the present call. While the specific implementation of ANI data, sometimes referred to as caller ID, may not be uniformly implemented throughout the United States, the ANI data is typically delivered between the first

and second rings. In the present invention, the central office switch 116 (see Figure 2) does not initiate a ring signal to the destination telephone 104 until after determining the status of the calling party based on the ANI. In future implementations, telecommunication companies may transmit other forms of caller identification, such as caller name, Internet address, email alias, or the like. The system 100 operates satisfactorily with any form of caller identification. The only requirement for the system 100 is that some form of caller identification be provided. The call is processed in accordance with the user-specified criteria in the affiliation list 150 for the identified caller.

In step 204, the central office switch 116 (see Figure 2) establishes the communication link 132 with the Internet 134. Although step 204 illustrates the system 100 as actively establishing the communication link 132 with the Internet 134, those skilled in the art will recognize that the system 100 can utilize a continuous high-speed data link between the central office switch and the Internet. Thus, it is not necessary to establish a network link for each and every incoming call processed by the central office switch 116. As previously described, the communication interface 136 translates data between the telephone protocol and the Internet protocol. In step 206, the system 100 accesses the affiliation list 150 for the user (*i.e.*, the called party). In an exemplary embodiment, the telephone number of the destination telephone 104 or other callee identification is used as an index or pointer to a specific location within the database where the affiliation list 150 for the particular user may be found. Database operation in general, and techniques for locating specific items within a database in particular are known to those skilled in the art and need not be described herein.

In decision 210, the system 100 determines whether the caller identification data is on the forward list 160 (see Figure 3). If the caller identification data is present in the forward list, the result of the decision 210 is

YES. In that event, the system 100 proceeds to Figure 6B where the call is processed in accordance with the rules associated with the forward list 160.

If the caller identification data is not present in the forward list 160 (see Figure 3), the result of decision 210 is NO. In that event, the system 100 moves to decision 212 to determine whether the caller identification data is in the allow list 166. If the caller identification data is present in the allow list 166, the result of decision 214 is YES. In that event, the system 100 proceeds to decision 216 where the call is processed in accordance with the rules associated with the allow list 166. If the caller identification data is not present in the allow list 166, the result of decision 216 is NO.

In decision 218, the system 100 determines whether the caller identification data is present in the reverse list 162. If the caller identification data is present in the reverse list 162, the system 100 proceeds to the step 220 where the call is processed in accordance with the rules associated with the reverse list 162. If the caller identification data is not present in the reverse list, the result of decision 218 is NO. In that event, the system moves to decision 216 to determine whether the caller is present on the block list 164. If the caller is present on the block list 164, the result of decision 222 is YES. In that event, the system proceeds to step 224 where the call is processed in accordance with the rules associated with the block list. If the caller identification data is not present in the block list 164, the result of decision 222 is NO. This indicates that the caller identification data is not present in any of the user-specified lists in the affiliation list 150. In that event, the system moves to step 226 where the call may be processed in accordance with user-specified rules of processing anonymous or unidentified calls. The flowchart of Figure 8 illustrates the operation of the system 100 with multiple lists wherein the call processing rules are designated for each list. In this embodiment, the call is processed on the basis of the presence or absence of the caller identification data in a particular list. However, as previously discussed, the affiliation list 150 (see

Figure 5B) may include user-specified status criteria for individual callers. In this embodiment, the system 100 processes the call on the basis of the user-specified status criteria associated with the individual caller rather than on the basis of the caller's presence or absence in a specific list. In that event, the system 100 may
5 simply access the user affiliation list (see step 206 in Figure 7) and process the call in accordance with the user-specified status criteria for the individual caller. If the caller identification data is not present in the affiliation list 160, the call may be processed using user-specified call processing criteria for unidentified callers, as shown in step 226.

10 Thus, the system 100 allows the user to specify call processing rules for a plurality of different caller lists or for individual callers within a list. The caller lists may be readily edited in accordance with the changing desires of the user. The user may alter the call processing rules in accordance with various times of day, work conditions, or even the personal mood of the user. For example, the user may
15 process all calls during certain times of the day, such as when the user is at work. However, when the user arrives home, subsequent calls may be processed in accordance with a different set of rules, such as accepting no calls during dinner time or after a certain time at night.

These rules may be applied differentially to different ones of the list in
20 the affiliation list 150. For example, the user may accept calls from any calling party on the forward list 160 (see Figure 3) or the allow list 166 during the evening hours. However, after a certain time at night, the caller may accept calls only from calling parties on the forward list 160. Thus, the system 100 allows great flexibility in the user selection of calling rules and lists. The system 100 allows the user to
25 filter incoming calls in accordance with generalized rules or in accordance with highly specific rules.

In addition to filtering incoming calls to the destination telephone 104, the system 100 can monitor the status or activity of both the caller and the callee and

establish a communication link between the originating telephone 102 and the destination telephone 104 when the status data indicates that both the caller and callee are available for a telephone conversation. The system 100 has been previously described with respect to callee status monitoring and processing of incoming calls in accordance with the user-selected (*i.e.*, the callee-selected) call processing criteria. Similar status monitoring can be performed for the caller. As illustrated in Figure 9, the system 100 may include a caller computer 184, which is coupled to the Internet via the communication link 132. For the sake of clarity, Figure 9 illustrates the callee computer 154 and the caller computer 184 as connected to the Internet 134 through a single Internet controller 152. However, those skilled in the art will appreciate that the Internet 134, or any computer network, includes many network controllers that function as a gateway to the network. Thus, the system 100 typically includes a large number of Internet controllers 152.

In addition, for the sake of clarity, Figure illustrates only a single affiliation list 150. However, those skilled in the art will appreciate that separate affiliation lists exist for the originating telephone 102 and the destination telephone 104. The central office switch 116 (or the call processor 176) access the appropriate affiliation list via the network connection 132 and apply the appropriate call processing rules for each telephone.

Figure 9 also illustrates a keyboard 154a and mouse 154b coupled to the callee computer 154 for use in a conventional fashion. Similarly, the caller computer 184 includes a keyboard 184a and a mouse 184b. The computer operating system, such as the Windows[®] operating system, is capable of monitoring user activity on the computer. For example, the operating system on the callee computer 154 can detect user activity on the keyboard 154a or the mouse 154b. By monitoring this activity, the operating system can determine the user's status and activate certain software programs, such as a screen saver, when no user activity has

been detected for a certain period of time. Under these circumstances, the operating system may determine that the callee computer 154 has entered an "idle" state. Similarly, operating system on the caller computer 184 may perform similar functions to determine user activity on the caller computer. Using the principles of the present invention, the callee computer 154 and the caller computer 184 may report the current status to the affiliation list 150 for each respective computer.

The system 100 can monitor computer activity and generate signals to both the originating telephone 102 and the destination telephone 104 when the callee computer 154 and the caller computer 184 are not in the idle state. The fact that both computers are not in the idle state indicates that the users of each respective computer may be available for a telephone conversation. In addition, the system 100 can apply call processing rules that may also govern operation of the telephone portion of the system 100. For example, the callee computer 154 may be in an "active" state (as opposed to the idle state) but the user has indicated that he should not be disturbed at the present time. Thus, the central office switch 116 or the call processor 176 accesses the affiliation list 150 for the destination telephone 104 to determine the callee-selected call processing criteria. In addition, the central office switch 116 or the call processor 176 can access the affiliation list 150 for the caller and apply any caller-selected call processing rules. For example, the caller computer 184 may be in the active state, but the caller status in the affiliation list 150 may indicate that the caller is in a meeting and is, therefore, unavailable for a telephone call with the callee. In this manner, the system 100 can monitor computer activity and determine when the caller and callee may both be available for a telephone call and further applies call processing criteria for both the caller and callee. The call processing criteria for the caller and callee as well as the current status of the callee computer 154 and the caller computer 184 are stored within the respective affiliation lists 150 on the Internet 134. This data may be accessed by the

central office switch 116 or the call processor 176 via the network connection 132 in the manner previously described.

In operation, the system allows a caller to indicate a desire to establish a telephone communication link with a specified callee. The caller can use the originating telephone 102 or the caller computer 184 to initiate the call processing by the system 100. The system 100 monitors the caller and callee activities and call processing rules and, when appropriate for both parties, establishes a telephone communication link by sending signals from the central office switch 116 to the originating telephone to generate a ring signal. The central office switch 116 also generates appropriate signals to generate ring signal at the destination telephone 104.

As can be appreciated, the originating telephone 102 communicates with the central office switch 116 using the communication link 110 while the caller computer 184 communicates with the Internet 134 using the communication link 132. The communication link 132 may be a second telephone line, a network connection, such as an Ethernet connection, or the like. If the user has two telephone lines, the telephone number of the telephone (e.g., the destination telephone 104) can be different from the telephone number associated with the computer (e.g., the callee computer 154). However, the system 100 must be aware of an association between the telephone and the computer. This is particularly important if the status of the computer (i.e., idle or active) is used as one of the call processing criteria. The system 100 can monitor the activity of a computer (e.g., the callee computer 154) in order to establish a telephone communication link with an associated telephone (e.g., the destination telephone 104). It is of no value to monitor a user's computer status at one location and call a completely unrelated telephone at a different location. For example, it is of no value to monitor the callee's computer at work and then to call the callee's home telephone number.

In other implementations, such as with a home computer, only a single telephone line may serve the function of both the communication link 110 and the communication link 132. Under these circumstances, the caller may use the caller computer 184 to indicate a desire to establish the telephone communication link and then must terminate the communication link 132 so that the central office switch
5 may generate the appropriate signals on the communication link 110 at a point in time when the callee call processing criteria and the caller call processing criteria are both met. It should be further noted that this implementation will preclude the use of the status (*i.e.*, idle or active) of the caller computer 184 since the
10 communication link 132 is not active.

Similarly, the destination telephone 104 and the callee computer 154 may be connected to the central office switch 116 and the Internet 134 via separate communication links (*i.e.*, the communication link 120 and the communication link 132, respectively). However, the system 100 may also be implemented with a single
15 phone line. The callee may use the callee computer 154 and the communication link 132 to generate or edit the callee call processing criteria in the affiliation list 150. However, the user must then terminate the communication link 132 to permit the central office switch 116 to establish the communication link 120. As noted above, a single phone line precludes the use of computer status monitoring (*i.e.*, idle or
20 active) for the callee computer 154 since the status cannot be monitored via the communication link 132.

The operation of the system 100 to establish a communication link with both the originating telephone 102 and the destination telephone 104 is illustrated in the flowchart of Figure 10 where, at a start 250, it is assumed that the
25 caller and callee both have data in their respective affiliation lists. As previously noted, the affiliation list 150 for each individual may comprise separate sublists, such as illustrated in Figure 5, or a single data structure containing call processing criteria, such as allowing or blocking individual calls (see Figure 7) or establishing

conditional criteria, such as time restrictions, current user status (*e.g.*, in a meeting), or the current status of the user's computer (*e.g.*, the idle or active status of the callee computer 154). Furthermore, as previously noted, user status can be automatically provided to the affiliation list 150 by a computerized schedule
5 program.

In step 252, the caller indicates a desire to establish a telephone communication link with the callee. In a conventional communication system, the caller picks up the originating telephone and dials the telephone number for the destination telephone 104. However, in accordance with this aspect of the system
10 100, the caller may indicate the desire to establish a telecommunication link using the caller computer 184 and placing the callee telephone number (*i.e.*, the telephone number of the destination telephone 104) on a call list, such as the forward list 160 (see Figure 5). By placing the callee on the forward list, the system 100 can access the callee affiliation list to determine whether the callee computer 154 is active on
15 the Internet.

With the callee telephone number (*i.e.*, the telephone number of the destination telephone 102) placed on the call list, the system 100 can determine the call processing criteria of both the caller and the callee, and process the request for a telephone call in accordance with those rules. In step 254, the system 100
20 establishes a communication link with the Internet 134. As previously noted, the central office switch 116 may directly establish the communication link 132 with the Internet 134 or may use the SCAI 174 and call processor 176 to communicate with the Internet. It should be noted that the telephone portion of the system may have a continuous data link with the Internet via the central office switch 116 or the call
25 processor 176. Thus, it is not necessary to continuously establish and tear down the communication link 132.

In step 258, the system 100 accesses the callee affiliation list 150. In step 260, the system 100 accesses the caller affiliation list 150. As previously

noted, the physical location of each affiliation list is unimportant to the satisfactory operation of the system. The only requirement is that the affiliation list is accessible via the computer network, such as the Internet 134.

In decision 262, the system 100 applies the callee call processing
5 criteria and determines whether the present calling conditions meet the callee criteria. This includes testing whether the caller is contained within one of the sublists illustrated in Figure 5 or if the status associated with the call origination data indicates that the caller is allowed or blocked, or the like. If the present calling conditions do not meet the callee criteria, the result of decision 262 is NO. In that
10 event, the system 100 can return to step 258 to again access the callee affiliation list. As those skilled in the art can appreciate, the callee affiliation list may be updated by the callee (typically via the callee computer 154) which may change the result of decision 262.

If the current call does meet the callee call processing criteria, the
15 result of decision 262 is YES. In that event, the system 100 uses the data from the caller affiliation list 150 to determine whether the present call meets the caller call processing criteria. Although the caller indicated a desire to establish a telephone link with the callee, the caller may not be available for an immediate phone call. For example, the caller may have a meeting scheduled to begin, but expects to be
20 available for a phone call following the meeting. The caller can manually set the call processing criteria, such as indicating the desired time of the telephone call. Alternatively, the caller call processing criteria may be automatically supplied to the caller affiliation list 150 through the use of a computerized scheduling program or the like. The system 100 may also monitor the status of the caller computer 184 to
25 determine caller availability. For example, the caller may indicate an availability for a phone call after a predetermined time. The system 100 can detect the change in the state of the caller computer 184 from the idle state to the active state and interpret that as an indication that the caller is now available for a telephone call.

The system can apply these conditions individually or in various combinations to determine the availability of the caller and callee. If the call does not meet the caller call processing criteria, the result of decision 264 is NO. In that event, the system 100 can return to step 258 to access the affiliation lists for the callee and caller, respectively, and thus continuously monitor the callee and caller call processing criteria to determine an appropriate time to make a phone call.

If the call does meet the caller call processing criteria, the result of decision 264 is YES. In that event, in step 266 the system 100 causes the central office switch 116 to send the appropriate ring signals to the originating telephone 102 and ring signals to the destination telephone 104. In this manner, the telephone system follows the call processing guidelines of both caller and callee stored on a computer network to control the processing of the call on the telephone network.

Although the example illustrated in Figure 10 illustrates a continuous process of checking call processing criteria against the current call conditions, those skilled in the art appreciate that other possible actions can be taken by the system 100. For example, the caller may be on the block list 164 (see Figure 5). In this condition, the call will never meet the callee call processing criteria. The system 100 thus will never establish a communication link. The system 100 can send a message to the caller computer 184 indicating that the callee does not accept calls in this manner and to leave a message on the voicemail system 180. Alternatively, the system 100 can establish a telephone communication link to the originating telephone 102 and provide a similar message. As discussed above with respect to Figure 4, a variety of voice mail messages can be provided to the user. The system 100 may establish a telephone communication link to the originating telephone 102 and play the appropriate outgoing message 182 (see Figure 4). As noted above, the system 100 can apply call processing rules derived from any source, such as the current status (*e.g.*, idle or active) of the callee computer 154 or the caller computer 184, the presence or absence on one of the sublists in Figure 5 (*e.g.*, the block list

164), the status of one party (e.g., the allowed status of the caller), callee or caller status data provided by computerized scheduling systems, or the like. The system 100 advantageously allows multiple forms of call processing criteria to be stored in the network, such as the Internet 134, and accessed by the telephone system, such as the central office switch 116 or the call processor 176. Those skilled in the art will also recognize that the embodiment of the system 100 shown in Figure 9 can be implemented with various telephone system configurations, such as those illustrated in Figures 2 and 3, or any other telephone system configuration. Furthermore, the system 100 is not limited by the specific component of the telephone system that establishes the network link 132 with the affiliation list 150. Although Figure 9 illustrates the central office switch 116 or the call processor 176 as the component that establishes the network link, those skilled in the art will recognize that other components, such as the central office switch 106 (see Figure 2), the LDC 124, or the like can establish the network link 132. Thus, the system 100 is not limited by the specific component of the telephone communication system that establishes the network link 132.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. For example, the system discussed herein uses, by way of example, the Internet 134 to store the affiliation list 150. However, the system 100 can be implemented with other computer networks or as a portion of a telephone switch, such as the central office switch 116. The telephone service provider can provide a customer with an affiliation list and some means to control the list as a value-added telephone service. The central office switch 116 accesses the internal affiliation list and processes the incoming calls in accordance with the user-specified criteria contained therein. Accordingly, the invention is not limited except as by the appended claims.

CLAIMS

What is claimed is:

1. A system for telephone call processing in a telephone network using an independent computer network, the system comprising:

an originating telephone associated with a caller and coupled to the telephone network;

a destination telephone associated with a callee and coupled to the telephone network;

a call processor coupled to the telephone network and the computer network to determine a callee status based on callee status data from the computer network and to determine a caller status based on caller status data from the computer network; and

a call generation controller to generate control signals on the telephone network to thereby initiate a telephone call to the originating telephone in response to the caller status data indicating that the caller is available to receive the telephone call and to initiate a telephone call to the destination telephone in response to the callee status data indicating that the callee is available to receive the telephone call.

2. The system of claim 1, further comprising a callee computing platform associated with the destination telephone and coupled to the computer network wherein the callee computing platform has an associated status based on user activity on the callee computing platform, the callee status data comprising the callee computing platform status.

3. The system of claim 2 wherein the callee computing platform includes a coordinate control input device and the call processor determines callee computing platform status by detecting user activation of the coordinate control device,

the callee computing platform status indicating the callee computing platform activity and callee availability to receive the telephone call.

4. The system of claim 2 wherein the callee computing platform includes a keyboard and the call processor determines callee computing platform status by detecting user activation of the keyboard, the callee computing platform status indicating the callee computing platform activity and callee availability to receive the telephone call.

5. The system of claim 1, further comprising a callee computing platform associated with the destination telephone and coupled to the computer network, wherein the callee computing platform executes computerized scheduling software to generate a callee schedule, the call processor determining callee status data based on the callee schedule.

6. The system of claim 5 wherein the callee computing platform stores data related to the callee schedule on the computer network, the call processor accessing the computer network to retrieve the data related to the callee schedule.

7. The system of claim 5 wherein the callee computing platform stores data related to the callee schedule on the computer platform, the call processor accessing the callee computing platform via the computer network to retrieve the data related to the callee schedule.

8. The system of claim 1 wherein the callee status data is generated by the callee to indicate callee availability to receive the telephone call and is stored in a callee data structure on the computer network, the call processor accessing the callee data structure to retrieve the callee-generated status data, the call generation controller

generating control signals on the telephone network to initiate the telephone call to the destination telephone only if the callee-generated status data indicates that the callee is available to receive the telephone call.

9. The system of claim 8 wherein the callee-generated status data is stored in the data structure in association with caller identification data and the telephone call includes origination identification data associated therewith, the call processor using the origination identification data to identify the callee-generated status data stored in the callee data structure in association with the caller identification data and generating control signals on the telephone network to initiate the telephone call to the destination telephone only if the callee-generated status data stored in association with the caller identification data indicates that the callee is available to receive the telephone call.

10. The system of claim 8 wherein the callee-generated status data is based on time of day, the call generation controller generating control signals to initiate the telephone call to the destination telephone only if the time of day corresponds to a time period in which the callee-generated status data indicates that the callee is available to receive the telephone call.

11. The system of claim 8 wherein the callee-generated status data is based on callee preferences, the call generation controller generating control signals to initiate the telephone call to the destination telephone only if call conditions correspond to the callee preferences.

12. The system of claim 1 wherein the caller status data is generated by the caller to indicate caller availability to receive the telephone call and is stored in a caller data structure on the computer network, the call processor accessing the data structure to retrieve the callee-generated status data, the call generation controller

generating control signals on the telephone network to initiate the telephone call to the originating telephone only if the caller-generated status data indicates that the caller is available to receive the telephone call.

13. The system of claim 12 wherein the caller-generated status data is based on time of day, the call generation controller generating control signals to initiate the telephone call to the originating telephone only if the time of day corresponds to a time period in which the caller-generated status data indicates that the caller is available to receive the telephone call.

14. The system of claim 12 wherein the caller-generated status data is based on caller preferences, the call generation controller generating control signals to initiate the telephone call to the originating telephone only if call conditions correspond to the callee preferences.

15. The system of claim 1 wherein the control signals on the telephone network comprise a ring signal to the originating telephone and a ring signal to the destination telephone.

16. The system of claim 1, further comprising an additional destination telephone associated with the callee and additional callee status data associated therewith, the call processor determining the callee status based on callee status data from the computer network and based on the additional callee status data associated with the additional destination telephone, the call generation controller to generate control signals on the telephone network to thereby initiate a telephone call to the originating telephone in response to the caller status data indicating that the caller is available to receive the telephone call and to initiate a telephone call to the destination telephone in response to the callee status data indicating that the callee is available to receive the telephone call or

a computer network access port used by the telephone network to access the caller and callee data structures; and

a call processor to access the callee and caller data structures via the computer network access port and to process the call processing request based on the callee and caller status data in the respective data structures.

21. The system of claim 20, further comprising a call generation controller to generate control signals on the telephone network to thereby initiate a telephone call to the originating telephone in response to the caller status data indicating that the caller is available to receive the telephone call and to initiate a telephone call to the destination telephone in response to the callee status data indicating that the callee is available to receive the telephone call.

22. The system of claim 20 wherein the callee data structure stores the callee status data in association with caller identification data and the incoming call includes origination identification data associated therewith, the controller using the origination identification data to identify callee status data stored in the callee data structure in association with the caller identification data.

23. The system of claim 22 wherein the identification data is telephone automatic number identification data.

24. The system of claim 20, further comprising a callee computing platform associated with the destination telephone and coupled to the computer network wherein the callee computing platform has an associated status based on user activity on the callee computing platform, the callee status data comprising the callee computing platform status.

25. The system of claim 20 wherein the callee status data is generated by the callee to indicate callee availability to receive the telephone call and is stored in the

callee data structure on the computer network, the call processor accessing the callee data structure to retrieve the callee-generated status data, the call processor processing the telephone call only if the callee-generated status data indicates that the callee is available to receive the telephone call.

26. The system of claim 25 wherein the callee-generated status data is stored in the callee data structure in association with caller identification data and the telephone call includes origination identification data associated therewith, the call processor using the origination identification data to identify the callee-generated status data stored in the callee data structure in association with the caller identification data and processing the telephone call to initiate the telephone call to the destination telephone only if the callee-generated status data stored in association with the caller identification data indicates that the callee is available to receive the telephone call.

27. The system of claim 25 wherein the callee-generated status data is based on time of day, the call processor processing the telephone call to the destination telephone only if the time of day corresponds to a time period in which the callee-generated status data indicates that the callee is available to receive the telephone call.

28. The system of claim 25 wherein the callee-generated status data is based on callee preferences, the call generation controller generating control signals to initiate the telephone call to the destination telephone only if call conditions correspond to the callee preferences.

29. The system of claim 20, further comprising a callee computing platform associated with the destination telephone and coupled to the computer network, wherein the callee computing platform executes computerized scheduling software to

generate a callee schedule, the call processor determining callee status data based on the callee schedule.

30. The system of claim 29 wherein the callee computing platform stores data related to the callee schedule in the callee data structure, the call processor accessing the callee data structure to retrieve the data related to the callee schedule.

31. The system of claim 29 wherein the callee computing platform stores data related to the callee schedule on the computer platform, the call processor accessing the callee computing platform via the computer network to retrieve the data related to the callee schedule.

32. The system of claim 20, further comprising a caller computing platform associated with the origination telephone and coupled to the computer network wherein the caller computing platform has an associated status based on user activity on the caller computing platform, the caller status data comprising the caller computing platform status.

33. The system of claim 20 wherein the caller status data is generated by the caller to indicate caller availability to receive the telephone call and is stored in the caller data structure on the computer network, the call processor accessing the caller data structure to retrieve the caller -generated status data, the call processor processing the telephone call only if the caller-generated status data indicates that the caller is available to receive the telephone call.

34. The system of claim 33 wherein the caller-generated status data is based on time of day, the call processor processing the telephone call to the origination

SEE FIG. 2A-2D

telephone only if the time of day corresponds to a time period in which the caller-generated status data indicates that the caller is available to receive the telephone call.

35. The system of claim 33 wherein the caller-generated status data is based on caller preferences, the call processor processing the telephone call to initiate the telephone call to the originating telephone only if call conditions correspond to the caller preferences.

36. The system of claim 20, further comprising a caller computing platform associated with the origination telephone and coupled to the computer network, wherein the caller computing platform executes computerized scheduling software to generate a caller schedule, the call processor determining caller status data based on the caller schedule.

37. The system of claim 36 wherein the caller computing platform stores data related to the caller schedule in the caller data structure, the call processor accessing the caller data structure to retrieve the data related to the caller schedule.

38. The system of claim 36 wherein the caller computing platform stores data related to the caller schedule on the computer platform, the call processor accessing the caller computing platform via the computer network to retrieve the data related to the callee schedule.

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39. A computer-readable medium containing computer-executable instructions for telephone call processing in a telephone network using a computer network of a telephone call between an originating telephone having an associated originating telephone number and a destination telephone having an associated destination telephone number by performing the steps of:

storing callee status data within a computer network in association with the destination telephone number;

storing caller status data within a computer network in association with the originating telephone number;

from the telephone network, accessing the callee status data and the caller status data from the computer network; and

processing the telephone call processing request based on the callee and caller status data.

40. The computer-readable medium of claim 39, further comprising computer-executable instructions for generating control signals on the telephone network to thereby initiate a telephone call to the originating telephone in response to the caller status data indicating that the caller is available to receive the telephone call and to initiate a telephone call to the destination telephone in response to the callee status data indicating that the callee is available to receive the telephone call.

41. The computer-readable medium of claim 39 wherein the callee status data is stored in association with caller identification data and the incoming call includes origination identification data associated therewith, the computer-readable medium containing computer-executable instructions for processing the telephone call using the origination identification data to identify callee status data stored in association with the caller identification data.

42. The computer-readable medium of claim 41 wherein the identification data is telephone automatic number identification data.

43. The computer-readable medium of claim 39 for use with a callee computing platform associated with the destination telephone and coupled to the computer network wherein the callee computing platform has an associated status based on user activity on the callee computing platform and the callee status data includes the callee computing platform status.

44. The computer-readable medium of claim 39 wherein the callee status data is generated by the callee to indicate callee availability to receive the telephone call based on time of day and the computer-readable medium contains computer-executable instructions for performing the steps of processing the telephone call to the destination telephone only if the time of day corresponds to a time period in which the callee-generated status data indicates that the callee is available to receive the telephone call.

45. The computer-readable medium of claim 39 wherein the callee status data is generated by the callee to indicate callee availability to receive the telephone call based on callee preferences and the computer-readable medium contains computer-executable instructions for performing the steps of processing the telephone call to the destination telephone only if call conditions correspond to the callee preferences.

46. The computer-readable medium of claim 39 for use with a callee computing platform associated with the destination telephone and coupled to the computer network wherein the callee computing platform executes computerized scheduling software to generate a callee schedule and the computer-readable medium contains computer-executable instructions for performing the steps of determining the callee status data based on the callee schedule.

47. A method for telephone call processing in a telephone network using a computer network of a telephone call between an originating telephone having an associated originating telephone number and a destination telephone having an associated destination telephone number, the method comprising:

storing callee status data within a computer network in association with the destination telephone number;

storing caller status data within a computer network in association with the originating telephone number;

from the telephone network, accessing the callee status data and the caller status data from the computer network; and

processing the telephone call processing request based on the callee and caller status data.

48. The method of claim 47, further comprising generating control signals on the telephone network to thereby initiate a telephone call to the originating telephone in response to the caller status data indicating that the caller is available to receive the telephone call and to initiate a telephone call to the destination telephone in response to the callee status data indicating that the callee is available to receive the telephone call.

49. The method of claim 47 wherein the callee status data is stored in association with caller identification data and the incoming call includes origination identification data associated therewith, telephone call being processed using the origination identification data to identify callee status data stored in association with the caller identification data.

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50. The method of claim 49 wherein the identification data is telephone automatic number identification data.

51. The method of claim 47 for use with a callee computing platform associated with the destination telephone and coupled to the computer network wherein the callee computing platform has an associated status based on user activity on the callee computing platform and the callee status data includes the callee computing platform status.

52. The method of claim 47 wherein the callee status data is generated by the callee to indicate callee availability to receive the telephone call based on time of day, the telephone call being processed to the destination telephone only if the time of day corresponds to a time period in which the callee-generated status data indicates that the callee is available to receive the telephone call.

53. The method claim 47 wherein the callee status data is generated by the callee to indicate callee availability to receive the telephone call based on callee preferences, the telephone call being processed to the destination telephone only if call conditions correspond to the callee preferences.

54. The method of claim 47 for use with a callee computing platform associated with the destination telephone and coupled to the computer network, wherein the callee computing platform executes computerized scheduling software to generate a callee schedule and the callee status data is based on the callee schedule.

55. The method of claim 47 for use with a caller computing platform associated with the originating telephone and coupled to the computer network wherein the caller computing platform has an associated status based on user activity on the caller

computing platform and the caller status data includes the caller computing platform status.

56. The method of claim 47 wherein the caller status data is generated by the caller to indicate caller availability to receive the telephone call based on time of day, the telephone call being processed to the originating telephone only if the time of day corresponds to a time period in which the caller-generated status data indicates that the caller is available to receive the telephone call.

57. The method claim 47 wherein the caller status data is generated by the caller to indicate caller availability to receive the telephone call based on caller preferences, the telephone call being processed to the originating telephone only if call conditions correspond to the caller preferences.

58. The method of claim 47 for use with a caller computing platform associated with the originating telephone and coupled to the computer network, wherein the caller computing platform executes computerized scheduling software to generate a caller schedule and the caller status data is based on the caller schedule.

Add A' 7

SYSTEM AND METHOD FOR COMPUTERIZED STATUS MONITOR AND USE IN
A TELEPHONE NETWORK

ABSTRACT OF THE DISCLOSURE

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A telecommunication system combines telephone technology and computer network technology to monitor a caller and callee's computer activity and to access call processing criteria selected by the caller and callee and stored on the computer network. A component of the telephone system, such as a central office switch, accesses the caller and callee call processing criteria. The system evaluates the call processing criteria and, when conditions for both caller and callee are met, the telephone system initiates a telephone call between the caller and callee. The call processing criteria may include accepting all calls, no calls, or calls only from specified parties. In addition, the call processing criteria can vary in accordance with the time of day or an individual's personal preferences, or status, such as when an individual is in a meeting. A user's computer activity may also be monitored and the computer status as idle or active may be reported to the computer network as part of the call processing criteria.

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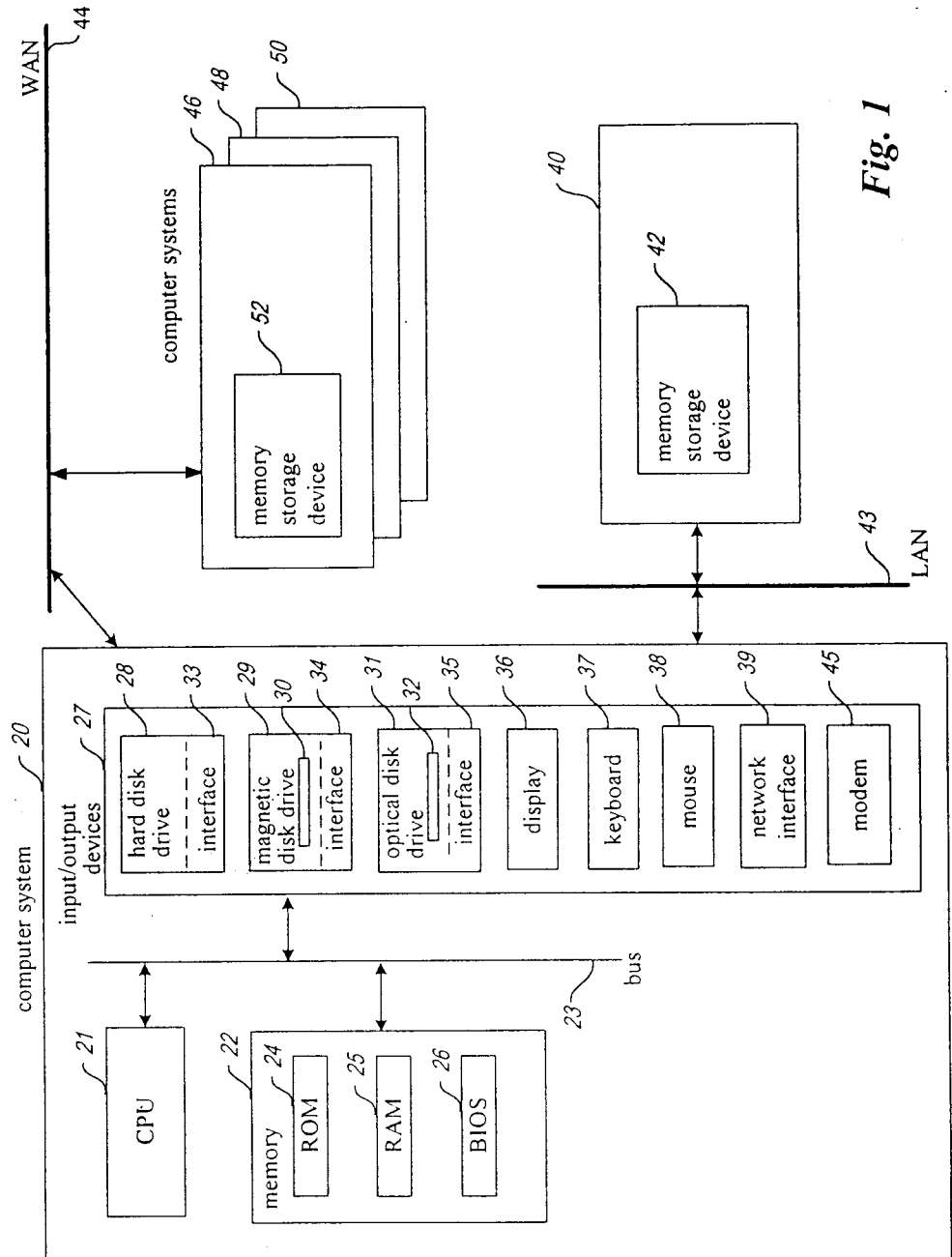


Fig. 1

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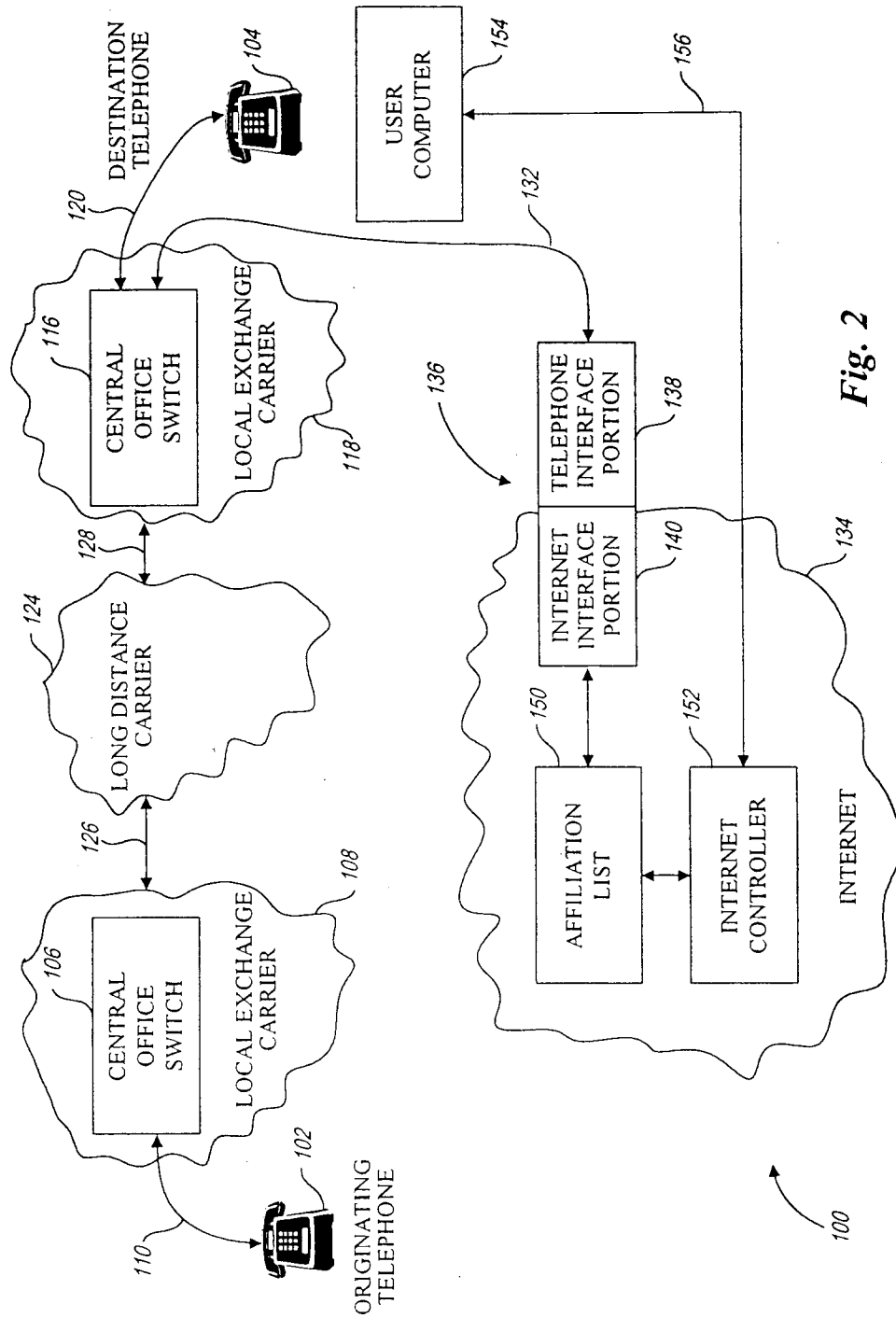


Fig. 2

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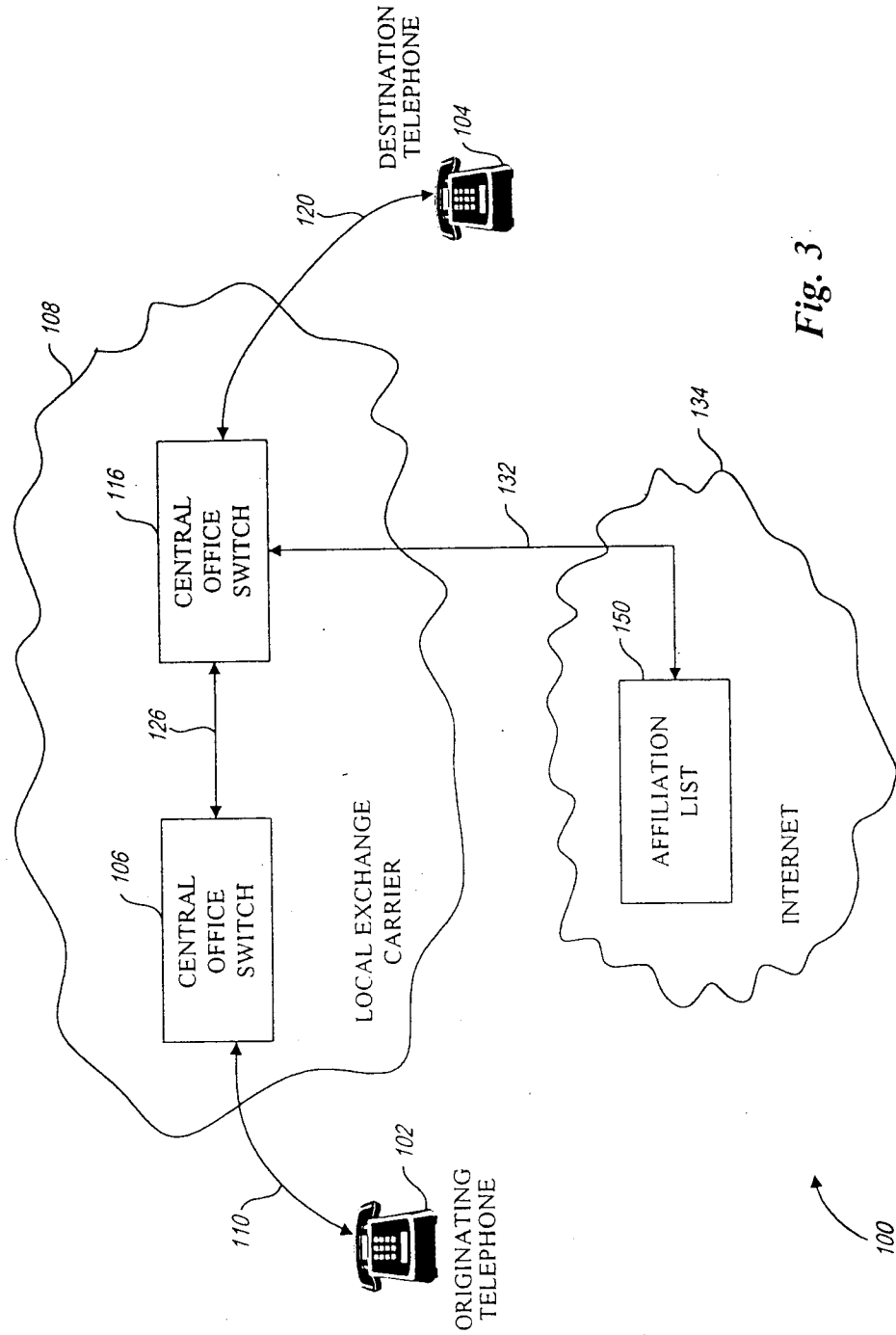


Fig. 3

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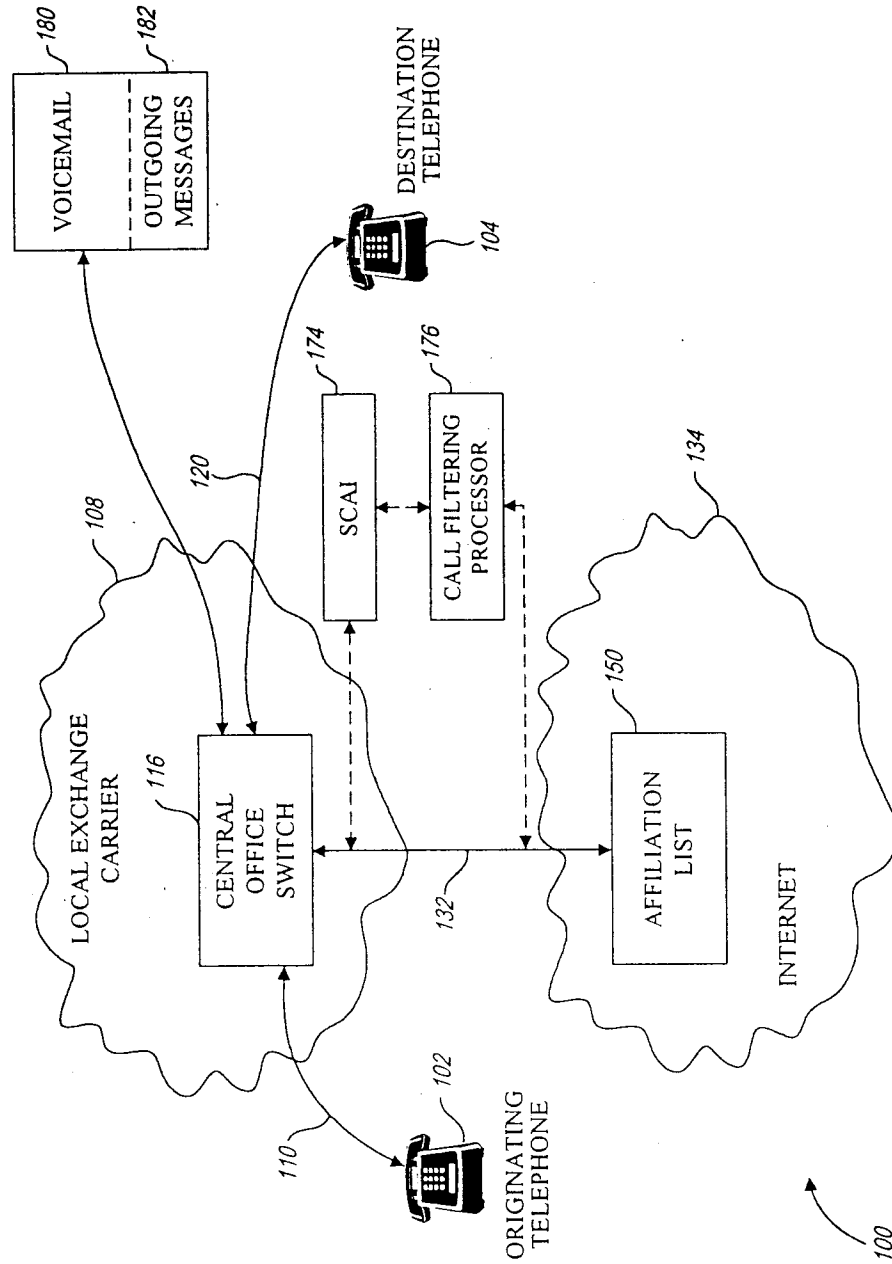


Fig. 4

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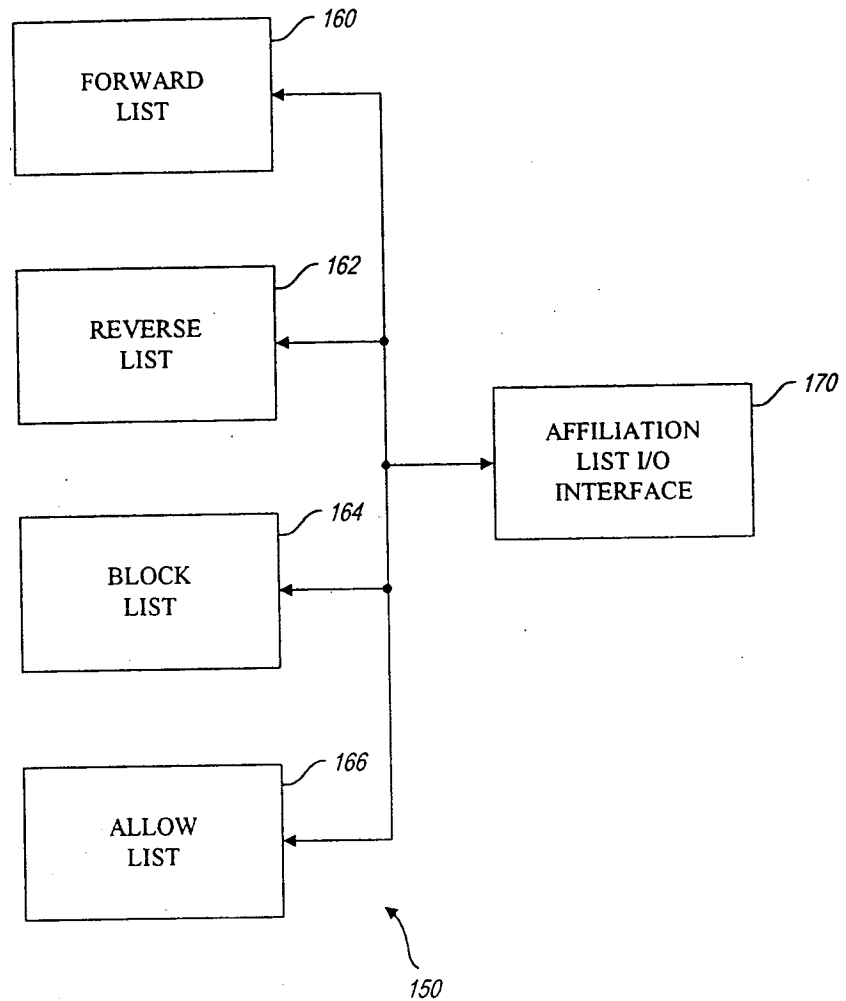


Fig. 5

**PRINT OF DRAWINGS
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SECRET

Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235

.....

Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236

•
•
•
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•
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Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239

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Fig. 6

[illegible]

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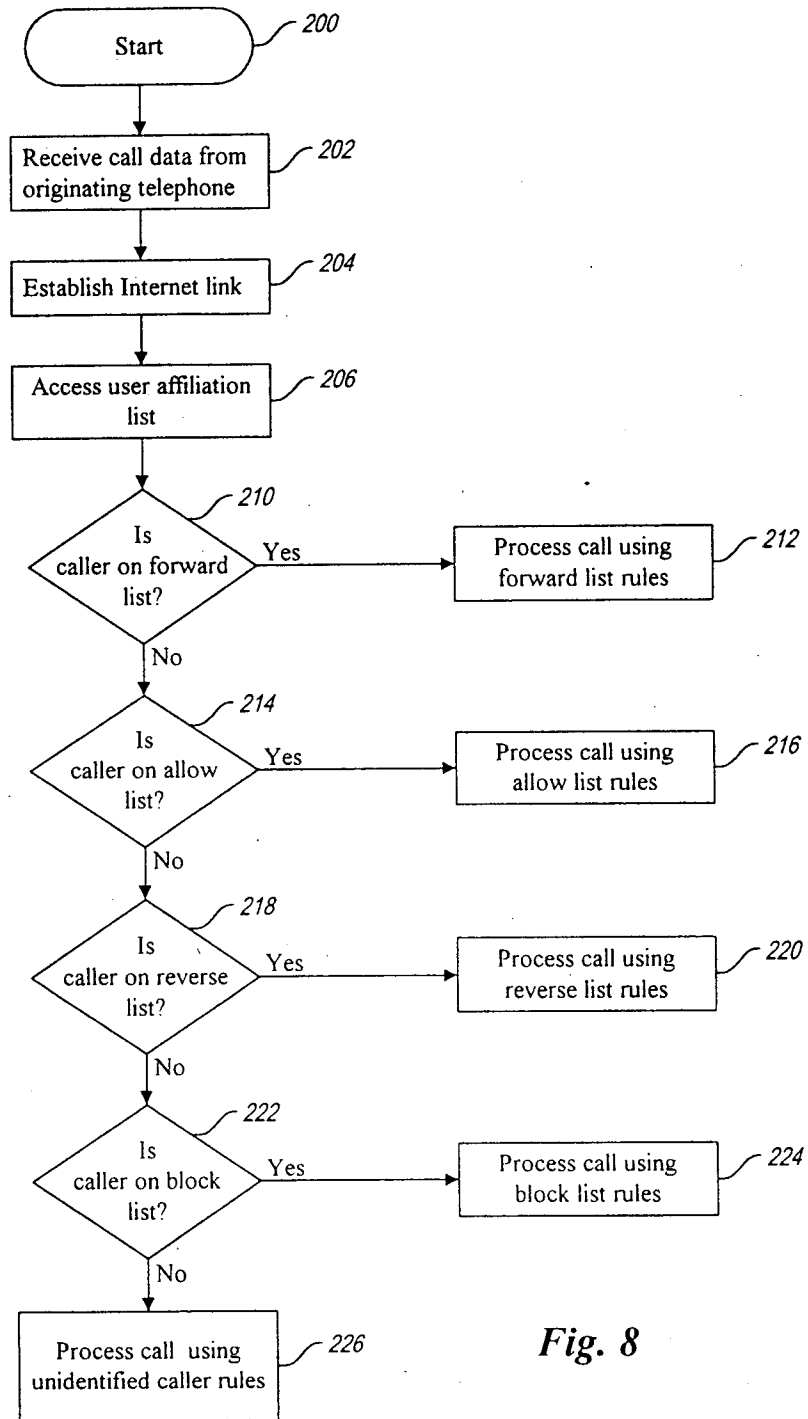


Fig. 8

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Sheet 10 of 26

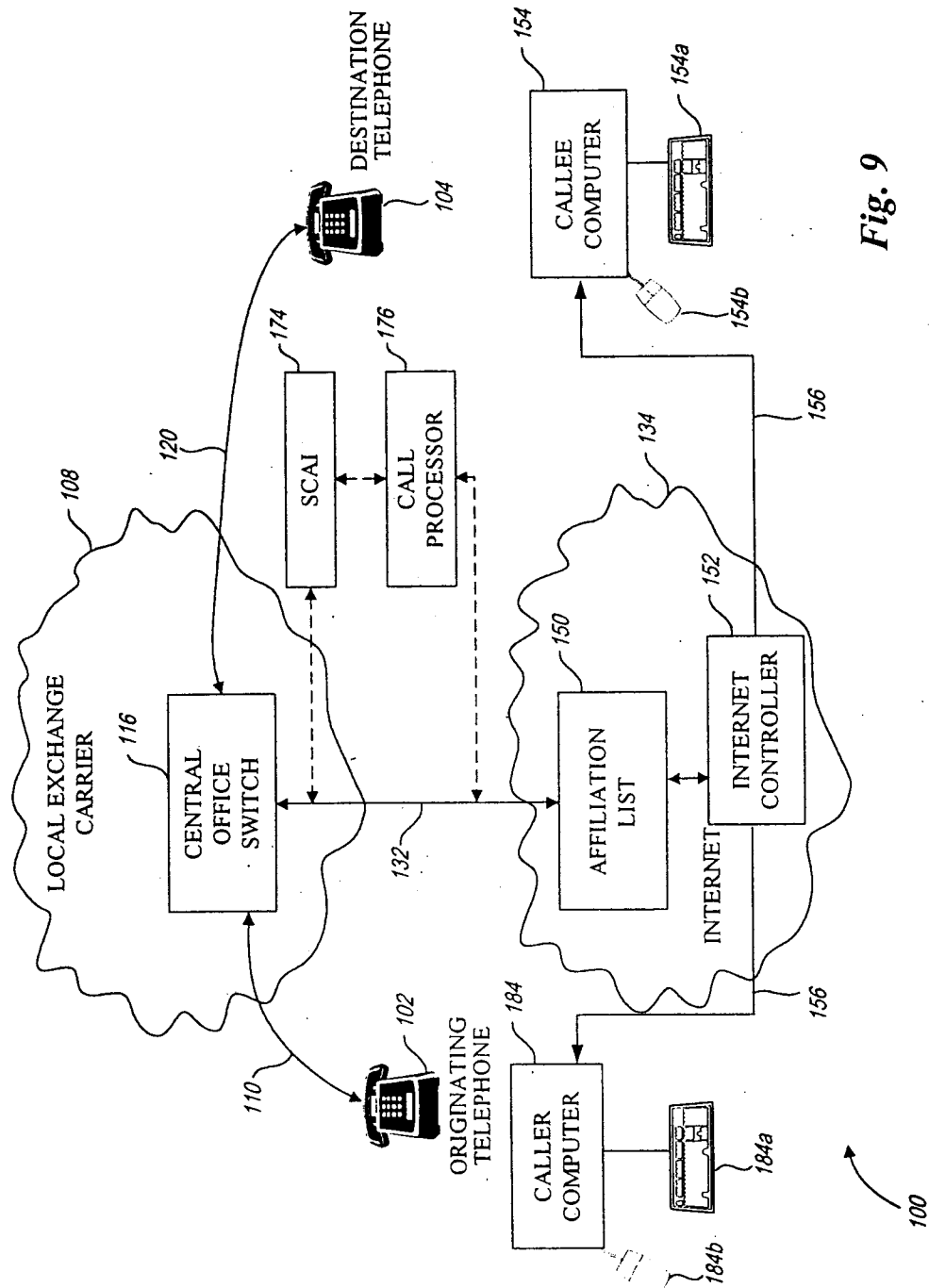


Fig. 9

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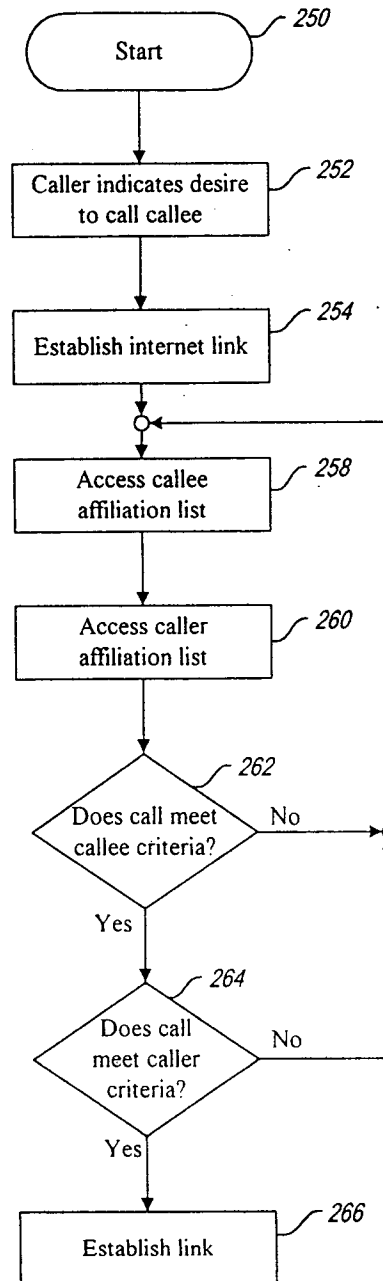
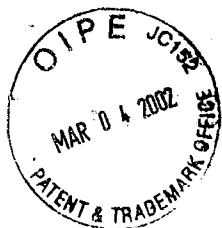


Fig. 10



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PATENT APPLICATION
Docket No. 13768.67.20

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)
)
Stephen Mitchell Liffick)
)
Serial No.: 09/291,693) Art Unit
) 2642
Conf No.: 2390)
)
Filed: April 13, 1999)
)
For: SYSTEM AND METHOD FOR COMPUTERIZED)
STATUS MONITOR AND USE IN A)
TELEPHONE NETWORK)
)
Examiner: C. H. Smith)

AMENDMENT A

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Responsive to the Office Action dated October 2, 2001, (paper No. 3), as extended by a Petition for Two Months Extension filed of even date, Applicant respectfully requests entry of the following amendments and reconsideration of the pending claims in view of the matters discussed at the Examiner Interview of Feb. 5, 2002, and the further remarks herein.

In the Claims:

Please cancel claims 1-58 without prejudice.

Please add new claims 59-78 as follows:

A1 ~~58~~ (New) In a system that includes a telephone network and a computer network with one or more users, wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a method of determining when to establish telephone communication between two parties, at least one of whom is a user connected to said computer network, comprising:

at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party;

at the computer network, monitoring activity of a user computer connected to the computer network and associated with the second party;

at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party;

at the computer network, using the set of pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party; and

using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

²
~~60~~ (New) A method as recited in claim ~~58~~¹, further comprising, at the computer network, monitoring activity of a user computer connected to the computer network and associated with the first party, wherein using the set of pre-determined rules is also performed using information regarding the monitored activity of the user computer of the first party.

³
~~61~~ (New) A method as recited in claim ~~59~~¹, wherein using the information processed at the computer network to facilitate connecting the call comprises sending control signals to the telephone network to cause the telephone network to connect the call.

⁴
~~62~~ (New) A method as recited in claim ~~59~~¹, wherein the pre-determined rules are associated with an affiliation list of the second party and wherein the first party is referenced by the buddy list.

⁵
~~63~~ (New) A method as recited in claim ~~59~~¹, wherein monitoring activity of a user computer connected to the computer network and associated with the second party comprises monitoring activity of an input device of the user computer.

⁶
~~64~~ (New) A method as recited in claim ~~59~~¹, wherein the pre-defined rules specify whether the second party accepts telephone calls from the first party.

2
65. (New) In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a computer program product comprising:

A
cont. a computer readable medium for carrying computer executable instructions for implementing at the computer network a method of determining when to establish telephone communication between two parties, at least one of whom is a user connected to said computer network, and wherein said method comprises:

at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party;

at the computer network, monitoring activity of a user computer connected to the computer network and associated with the second party;

at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party; and

at the computer network, using the set of pre-determined rules to process
i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party.

⁸
~~66~~. (New) A computer program product as recited in claim ~~65~~⁷, wherein the method further comprises using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

⁹
~~67~~. (New) A computer program product as recited in claim ~~66~~⁷, wherein the pre-determined rules specify whether the second party accepts telephone calls from the first party.

¹⁰
~~68~~. (New) A computer program product as recited in claim ~~67~~⁷, wherein the pre-determined rules define how the telephone call is to be processed based on the time of the day of the telephone call.

¹¹
~~69~~. (New) A computer program product as recited in claim ~~68~~⁷, wherein the method further comprises, at the computer network, monitoring activity of a user computer connected to the computer network and associated with the first party, wherein using the set of pre-determined rules is also performed using information regarding the monitored activity of the user computer of the first party.

12
70. (New) In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a method of determining when to establish telephone communication between two parties, each of whom is a user connected to said computer network, comprising:

at the computer network, monitoring activity of the user computers associated with both a first and a second party;

at the computer network, receiving information from the telephone network that the first party is originating a call to the second party;

at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party;

at the computer network, using the set of pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computers of the first and second parties, to determine when the second party is available to take the call originated by the first party; and

using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

13
71. (New) A method as recited in claim 70¹², wherein using the information processed at the computer network to facilitate connecting the call comprises sending control signals to the telephone network to cause the telephone network to connect the call.

¹⁴
~~72~~ (New) A method as recited in claim ¹²
~~70~~, wherein the pre-determined rules are
associated with an affiliation list of the second party and wherein the first party is referenced by
the buddy list.

¹⁵
~~73~~ (New) A method as recited in claim ¹²
~~70~~, wherein monitoring activity of a user
computer connected to the computer network and associated with the second party comprises
monitoring activity of an input device of the user computer associated with the second party.

¹⁴
~~74~~ (New) A method as recited in claim ¹²
~~70~~, wherein the pre-defined rules specify
whether the second party accepts telephone calls from the first party.

¹⁷
~~75~~ (New) In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a computer program product comprising:

A
ant.
a computer readable medium for carrying computer executable instructions for implementing at the computer network a method of determining when to establish telephone communication between two parties, each of whom is a user connected to said computer network, wherein said method comprises:

at the computer network, monitoring activity of the user computers associated with both the first and second parties;

at the computer network, receiving information from the telephone network that the first party is originating a call to the second party;

at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party; and

at the computer network, using the set of pre-determined rules to process
i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computers of the first and second parties, to determine when the second party is available to take the call originated by the first party.

¹⁸
~~76~~ (New) A computer program product as recited in claim ¹⁷~~75~~, wherein the method further comprises using the information processed at the computer network to facilitate

connecting the call originated by the first party through the telephone network to the second party.

¹⁹
~~77~~ (New) A computer program product as recited in claim ¹⁷~~75~~, wherein the pre-determined rules specify whether the second party accepts telephone calls from the first party.

²⁰
~~78~~ (New) A computer program product as recited in claim ¹⁷~~75~~, wherein the pre-determined rules define how the telephone call is to be processed based on the time of the day of the telephone call.

REMARKS

Applicant expresses appreciation to the Examiner for the Interview conducted with applicant's representative, Rick D. Nydegger. During the Interview, Applicant proposed submitting new independent method claims and corresponding computer program product claims as generally described by the draft claim discussed at the interview. As noted in the Examiner's Interview Summary (Paper No. 5) prepared at the conclusion of the Interview, the Examiner noted that the proposed claims, as represented in particular by the draft claim discussed, appeared to be patentably distinguished over the applied prior art.

By this paper, applicant has submitted new independent method claims 59 and 70, and corresponding computer program product claims 65 and 75, respectively. Claims 59-78 are submitted for entry and reconsideration.

In the Office Action (Paper No. 3) all of the then pending claims (e.g., 1-58) were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Pat. No. 6,175,619 ("DeSimone").¹ Since the independent claims as originally submitted have been cancelled and replaced by new independent claims 59, 65, 70 and 75, the prior rejections of record are moot. Accordingly, the following remarks are not submitted in response to those rejections. Indeed, as reflected in the Examiner's Interview Summary (Paper No. 5), the proposed new claims appeared to be patentably distinguished over the prior art of record, and as such, would appear to be allowable in the first instance. Accordingly, the following remarks merely confirm the points of discussion that were made at the Interview.

¹ Since DeSimone qualifies, if at all, as "prior" art only under § 102(e), applicant specifically reserves the right to challenge the prior art status of the reference at such time as may be necessary or desirable. Any argument herein distinguishing DeSimone on the merits is to be taken in all respects as merely assuming *arguendo* the prior art status of the reference.

As discussed at the Interview, DeSimone describes a system and method for providing anonymous voice communications using a telephone network under the direction of an on-line data network. In particular, a "call broker" receives call setup information from on-line session participants, such as chat room participants, which is then used to permit anonymous (e.g., neither party knows the name or number of the other) calls to be carried out when requested by both parties. The system and method require that each chat room participant establish a data connection to a telephone company site using a web browser to establish a call broker session. The call broker provides session information (such as a telephone company URL) and a participant authorization code that are passed to a selected chat participant. If the selected chat participant then uses the URL of the telephone company to access the telephone company's site, and then enters the authorization code that was passed to him or her, along with his or her call-back number, the telephone company can then complete a voice link between the initiator and the selected chat participant, while maintaining anonymity of both.

Thus, in simplest terms, DeSimone uses an affirmative request from both participants to initiate the call in an anonymous manner through a broker. This is manifestly unlike the claimed invention, which is directed to a method of determining when to establish telephone communication between two parties, at least one of whom is a user connected to a computer network. As claimed, applicant's invention requires receiving information from a telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party. This information is communicated to a computer network (such as a server on the Internet) which is interfaced to the telephone network. The second party's activity on the network is monitored. The monitoring server also stores at the computer network a set of pre-determined rules for determining when the second party is available to take

a call from the first party. Then, using the set of pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first part, and ii) information regarding the monitored activity of the user computer of the second party, a determination is made as to when the second party is available to take the call originated by the first party. Using the information processed at the computer network using the pre-determined rules, the call originated by the first party through the telephone network to the second party is facilitated so that the call can be connected at the appropriate time through the telephone network.

Thus, for at least the foregoing reasons, and as reflected in the Interview Summary, as defined in the proposed claims, applicant's invention is neither anticipated nor made obvious by the prior art of record.

In the event that the Examiner finds any remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

Dated this 4th day of March, 2002.

Respectfully submitted,



R. BURNS ISRAELSEN
Attorney for Applicant
Registration No. 42,685



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

Claims 1-58 have been canceled.

New claims 59-78 have been added as follows:

59. (New) In a system that includes a telephone network and a computer network with one or more users, wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a method of determining when to establish telephone communication between two parties, at least one of whom is a user connected to said computer network, comprising:

at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party;

at the computer network, monitoring activity of a user computer connected to the computer network and associated with the second party;

at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party;

at the computer network, using the set of pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party; and

using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

60. (New) A method as recited in claim 59, further comprising, at the computer network, monitoring activity of a user computer connected to the computer network and associated with the first party, wherein using the set of pre-determined rules is also performed using information regarding the monitored activity of the user computer of the first party.

61. (New) A method as recited in claim 59, wherein using the information processed at the computer network to facilitate connecting the call comprises sending control signals to the telephone network to cause the telephone network to connect the call.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

62. (New) A method as recited in claim 59, wherein the pre-determined rules are associated with an affiliation list of the second party and wherein the first party is referenced by the buddy list.

63. (New) A method as recited in claim 59, wherein monitoring activity of a user computer connected to the computer network and associated with the second party comprises monitoring activity of an input device of the user computer.

64. (New) A method as recited in claim 59, wherein the pre-defined rules specify whether the second party accepts telephone calls from the first party.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

65. (New) In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a computer program product comprising:

a computer readable medium for carrying computer executable instructions for implementing at the computer network a method of determining when to establish telephone communication between two parties, at least one of whom is a user connected to said computer network, and wherein said method comprises:

at the computer network, receiving information from the telephone network that a first party from whom a call is originating desires to establish telephone communication with a second party;

at the computer network, monitoring activity of a user computer connected to the computer network and associated with the second party;

at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party; and

at the computer network, using the set of pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computer of the second party, to determine when the second party is available to take the call originated by the first party.

66. (New) A computer program product as recited in claim 65, wherein the method further comprises using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

67. (New) A computer program product as recited in claim 65, wherein the pre-determined rules specify whether the second party accepts telephone calls from the first party.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

68. (New) A computer program product as recited in claim 65, wherein the pre-determined rules define how the telephone call is to be processed based on the time of the day of the telephone call.

69. (New) A computer program product as recited in claim 65, wherein the method further comprises, at the computer network, monitoring activity of a user computer connected to the computer network and associated with the first party, wherein using the set of pre-determined rules is also performed using information regarding the monitored activity of the user computer of the first party.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

70. (New) In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a method of determining when to establish telephone communication between two parties, each of whom is a user connected to said computer network, comprising:

at the computer network, monitoring activity of the user computers associated with both a first and a second party;

at the computer network, receiving information from the telephone network that the first party is originating a call to the second party;

at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party;

at the computer network, using the set of pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computers of the first and second parties, to determine when the second party is available to take the call originated by the first party; and

using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

71. (New) A method as recited in claim 70, wherein using the information processed at the computer network to facilitate connecting the call comprises sending control signals to the telephone network to cause the telephone network to connect the call.

72. (New) A method as recited in claim 70, wherein the pre-determined rules are associated with an affiliation list of the second party and wherein the first party is referenced by the buddy list.

73. (New) A method as recited in claim 70, wherein monitoring activity of a user computer connected to the computer network and associated with the second party comprises monitoring activity of an input device of the user computer associated with the second party.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

74. (New) A method as recited in claim 70, wherein the pre-defined rules specify whether the second party accepts telephone calls from the first party.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

75. (New) In a system that includes a telephone network and a computer network with one or more users, and wherein each user is connected through a user computer to the computer network and is logically connected through the computer network to the telephone network, a computer program product comprising:

a computer readable medium for carrying computer executable instructions for implementing at the computer network a method of determining when to establish telephone communication between two parties, each of whom is a user connected to said computer network, wherein said method comprises:

at the computer network, monitoring activity of the user computers associated with both the first and second parties;

at the computer network, receiving information from the telephone network that the first party is originating a call to the second party;

at the computer network, storing a set of pre-determined rules for determining when the second party is available to take a call from the first party; and

at the computer network, using the set of pre-determined rules to process i) the information received from the telephone network regarding the call being originated by the first party, and ii) information regarding the monitored activity of the user computers of the first and second parties, to determine when the second party is available to take the call originated by the first party.

76. (New) A computer program product as recited in claim 75, wherein the method further comprises using the information processed at the computer network to facilitate connecting the call originated by the first party through the telephone network to the second party.

77. (New) A computer program product as recited in claim 75, wherein the pre-determined rules specify whether the second party accepts telephone calls from the first party.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

78. (New) A computer program product as recited in claim 75, wherein the pre-determined rules define how the telephone call is to be processed based on the time of the day of the telephone call.

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PTO/SB/21 (08-00)
 Approved for use through 10/31/2002. OMB 0651-0031
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TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application	09/291,693
	Filing Date	April 13, 1999
	First Named	Stephen Mitchell Liffick
	Group Art Unit	2642
	Examiner Name	Smith, C. H.
Total Number of Pages in This Submission	Attorney Docket Number	13768.67.20

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<input checked="" type="checkbox"/> Fee Attached	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
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<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Petition to Convert a Provisional Application	<input type="checkbox"/> Status Letter
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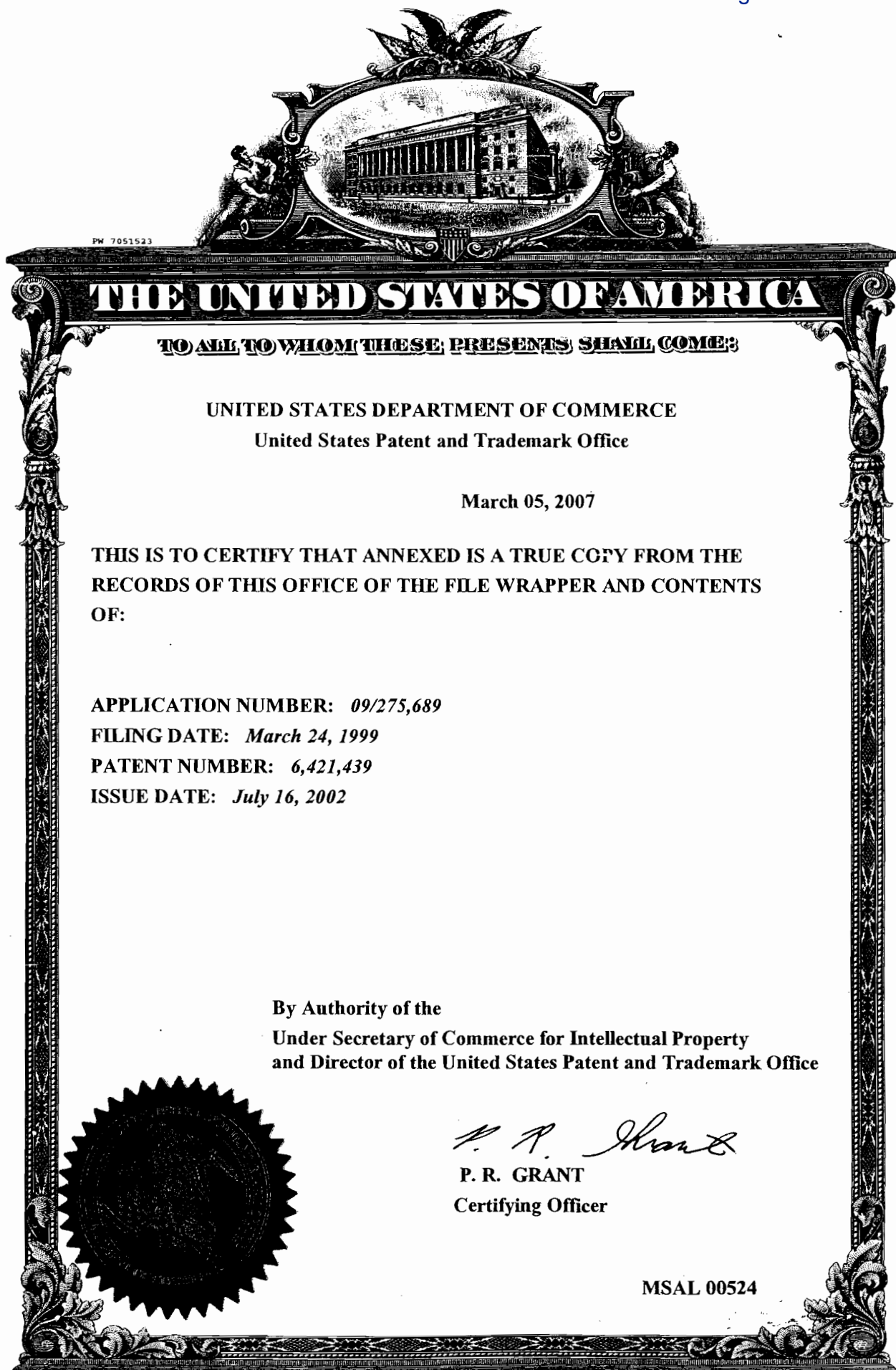
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	R. Burns Israelsen WORKMAN, NYDEGGER & SEELEY
Signature	<i>R. Burns Israelsen</i>
Date	March 4, 2002

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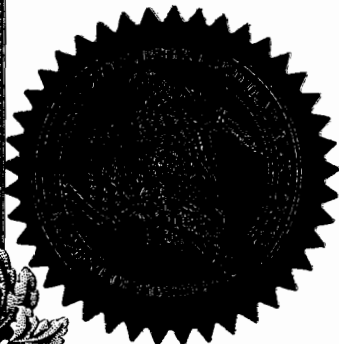
APPLICATION NUMBER: 09/275,689

FILING DATE: March 24, 1999

PATENT NUMBER: 6,421,439

ISSUE DATE: July 16, 2002

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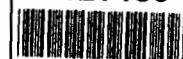
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Class Subclass
ISSUE CLASSIFICATION

U.S. UTILITY PATENT APPLICATION

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ISSUING CLASSIFICATION							
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<input type="checkbox"/> TERMINAL DISCLAIMER	DRAWINGS			CLAIMS ALLOWED	
	Sheets Drwg. 8	Figs. Drwg. 8	Print Fig. 2	Total Claims 51	Print Claim for O.G. 1
<input type="checkbox"/> a) The term of this patent subsequent to _____ (date) has been disclaimed.	BENNY Q. TIEU PATENT EXAMINER (Assistant Examiner)			NOTICE OF ALLOWANCE MAILED 3/19/02	
<input type="checkbox"/> b) The term of this patent shall not extend beyond the expiration date of U.S. Patent. No. _____	AHMAD F. MATAR SUPERVISORY PATENT EXAMINER TECHNOLOGY CENTER 2600 (Primary Examiner) 3/8/02 (Date)			ISSUE FEE Amount Due \$1280 Date Paid 6/5/02 ML	
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Formal Drawings (____ shts) set

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MSAL 00525

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Stephen Mitchell Liffick

Title

SYSTEM AND METHOD FOR USER AFFILIATION IN TELEPHONE NETWORK

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See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO:

Box Patent Application
Assistant Commissioner
Washington, D.C. 20234

- ### ACCOMPANYING APPLICATION PARTS

- 17. If a CONTINUING APPLICATION,** check appropriate box and supply the requisite information below and in a preliminary amendment

☐ Continuation ☐ Divisional ☐ Continuation-In-Part (CIP) of prior Application No.: _____

Prior application information: Examiner _____ Group / Art Unit _____

☐ Claims the benefit of Provisional Application No. _____

CORRESPONDENCE ADDRESS

Michael J. Donohue
Seed and Berry LLP
6300 Columbia Center; 701 Fifth Avenue
Seattle, Washington 98104-7092
(206) 622-4900 *phone*; (206) 682-6031 *fax*

Respectfully submitted,

TYPED or PRINTED NAME Michael J. Donohue

REGISTRATION NO. 35.859

SIGNATURE

U:\ShannonR\1022

Date March 24, 1999

MSAL 00528



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



Applicant : Stephen Mitchell Liffick
Filed : March 24, 1999
For : SYSTEM AND METHOD FOR USER AFFILIATION IN A
TELEPHONE NETWORK

Docket No. : 664005.454
Date : March 24, 1999

Box Patent Application
Assistant Commissioner for Patents
Washington, DC 20231

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Respectfully submitted,

SEED and BERRY LLP

Aaron Dooley / Jeanette West / Susan Johnson

Enclosures:

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General Authorization Under 37 C.F.R. § 1.136(a)(3) and Fee Transmittal (+ copy)
Specification, Claims, Abstract (36 pages)
8 Sheets of Drawings (Figures 1-8)
Declaration and Power of Attorney
Form PTO-1595
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PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Stephen Mitchell Liffick
 Title : SYSTEM AND METHOD FOR USER AFFILIATION IN A
 TELEPHONE NETWORK
 Docket No. : 664005.454
 Date : March 24, 1999

Box Patent Application
 Assistant Commissioner for Patents
 Washington, DC 20231

GENERAL AUTHORIZATION UNDER 37 C.F.R. § 1.136(a)(3)
AND FEE TRANSMITTAL

Sir:

With respect to the above-identified application, the Assistant Commissioner is authorized to treat any concurrent or future reply requiring a petition for an extension of time under 37 C.F.R. § 1.136(a)(3) for its timely submission as incorporating a petition therefor for the appropriate length of time. The Assistant Commissioner is also authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. 19-1090.

With respect to the above-identified application, the fee is calculated below:

For	Number filed	Number extra		Rate		
Basic Fee						\$ 760
Total Claims	51	31	X	\$ 18	=	\$ 558
Independent Claims	4	1	X	\$ 78	=	\$ 78
Assignment Fee					+	\$ 40
TOTAL FILING FEE						\$ 1436

A check in the amount of \$1436 is enclosed to cover the filing fee.

MSAL 00530

The Assistant Commissioner is authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required, or credit any overpayment, to Deposit Account No. 19-1090. A duplicate copy of this request is enclosed.

Date March 24, 1999

Michael J. Donohue
Michael J. Donohue
Registration No. 35,859

MJD:sr

SEED and BERRY LLP
6300 Columbia Center
701 Fifth Avenue
Seattle, Washington 98104-7092
(206) 622-4900
FAX: (206) 682-6031

U:/ShannonR/1021

MSAL 00531

SYSTEM AND METHOD FOR USER AFFILIATION
IN A TELEPHONE NETWORK

TECHNICAL FIELD

The present invention is directed generally to telecommunications and,
5 more particularly, to a system and method for user selection of individual
affiliations in a telephone network.

BACKGROUND OF THE INVENTION

Advances in telecommunication technology provide a user with a
broad variety of communication options. For example, advances in telephone
10 communication, including wireless telephone and cellular telephone, allow almost
instantaneous communication between virtually any two locations on earth.
Telephone service providers typically offer wide range of options, such as voice
mail, caller identification, call waiting, call forwarding, three-way calling, and the
like. The telephone service subscriber can customize their own telecommunications
15 service with the selection of one or more options.

Despite these advances, the user is still limited in determining with
whom the user wishes to speak and when the user wishes to speak with certain
parties or, at the user's option, not speak with certain parties. Although caller
identification (ID) can identify the calling party, caller ID does not always correctly
20 identify the caller. For example, if the number identification data is not transmitted
along with the call, the caller ID device indicates that caller data is "unavailable."
In addition, the user must still respond to the ringing telephone and view the caller
identification box to determine whether or not to answer the telephone. Thus,
existing telephone technologies do not always provide user with the desired degree
25 of control over incoming calls.

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✓ Therefore, it can be appreciated that there is a significant need for
✓ system and method to control incoming calls to a user's telephone. The present
invention provides this and other advantages as will be apparent from the following
detailed description and accompanying figures.

5 SUMMARY OF THE INVENTION

A system to specify user-selectable criteria for call processing is implemented on a conventional telephone system, such as a public switched telephone network (PSTN). The user-specified call processing criteria is stored on a network that is accessible by the user for data entry and/or editing, and is also
10 accessible by the PSTN to determine whether call processing criteria exists for the particular caller. The Internet provides a readily available data structure for storage of the user-selectable call processing criteria. The user can establish a database stored on the Internet in association with the user's telephone number and indicating the user-selectable call processing criteria for one or more potential callers.

15 The caller may be identified by caller identification data, such as automatic number identification (ANI). Based on the destination telephone number and the caller identification data, the PSTN accesses the Internet and examines an affiliation list corresponding to the destination telephone number. If the caller identification data is present in the affiliation list, the call may be processed in
20 accordance with the user-specified criteria for that particular caller.

The user (*i.e.*, the called party) can specify user-selectable call processing criteria for all incoming calls, incoming calls from selected callers, and may further apply conditional criteria based on user preferences. For example, the user may select all calls during certain times of the day, calls from selected parties
25 during other specified times of the day, and no calls during other times of the day. The user-selectable call processing criteria may be readily edited by the user and may be applied to multiple phone numbers associated with a particular caller.

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The system may be readily implemented on current telephone systems with no significant modifications. For example, the system may apply the user-specified call processing criteria at the central office switch to which the destination telephone is coupled. All call processing prior to arrival at that central office switch is performed in accordance with conventional telecommunication techniques and standards. When a call arrives at the central office switch coupled to the destination telephone, the central office switch does not immediately establish a communication link with the destination telephone, but accesses the user-specified call processing criteria on the Internet and applies the call processing criteria. If the call is allowed, the central office switch establishes a communication link with the destination telephone in a conventional fashion to complete the telephone call. If the call is not allowed, the central office switch will not process the call, and may generate a busy signal to indicate that the user is unavailable.

The system may also be implemented at other points in the telecommunication network, such as a central office switch at the originating telephone. In addition, the user-specified call processing criteria may be stored on other forms of networks that are accessible to both the user (*i.e.*, the called party) and the telecommunication system.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a computer system that includes components to implement the system of the present invention.

Figure 2 is a functional block diagram outlining the operation of the present invention.

Figure 3 is a functional block diagram of an alternate telecommunications configuration implementing the present invention.

Figure 4 is a functional block diagram of another alternative telecommunications configuration implementing the present invention.

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Figure 5 is a functional block diagram providing details of the affiliation list of the system of Figure 2.

Figure 6 illustrates sample data provided in the list of Figure 5.

Figure 7 illustrates additional sample data provided in the list of
5 Figure 3.

Figure 8 is a flowchart illustrating the operation of the system of Figure 2.

DETAILED DESCRIPTION OF THE INVENTION

Existing telephone technology does not provide the telephone
10 subscriber with a technique for controlling access to the user's telephone. Features such as caller ID identify the caller, but do not control access to the user's telephone. Thus, the conventional telephone system forwards the user to extreme options. The user may answer all incoming calls or may choose not to answer any incoming calls. However, the present invention provides selective options in
15 between these two extremes. The present invention combines telephone technology with Internet technology to allow the user to "filter" incoming calls based on user-selected criteria. In particular, the user may establish a series of lists, stored on the Internet in association with the user's telephone, to filter incoming calls and thereby control access to the user's telephone.

20 Figure 1 and the following discussion are intended to provide a brief, general description of a suitable computing environment in which the invention may be implemented. Although not required, the invention will be described in the general context of computer-executable instructions, such as program modules, being executed by a personal computer. Generally, program modules include
25 routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with other computer system

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configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, and the like. The invention may also be practiced in distributed computing environments where tasks are performed by
5 remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

With reference to Figure 1, an exemplary system for implementing the invention includes a general purpose computing device in the form of a conventional
10 personal computer 20, including a processing unit 21, a system memory 22, and a system bus 23 that couples various system components including the system memory to the processing unit 21. The system bus 23 may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The system memory 22
15 includes read only memory (ROM) 24 and random access memory (RAM) 25. A basic input/output system 26 (BIOS), containing the basic routines that helps to transfer information between elements within the personal computer 20, such as during start-up, may be stored in ROM 24.

The personal computer 20 further includes input/output devices 27,
20 such as a hard disk drive 28 for reading from and writing to a hard disk, not shown, a magnetic disk drive 29 for reading from or writing to a removable magnetic disk 30, and an optical disk drive 31 for reading from or writing to a removable optical disk 32 such as a CD ROM or other optical media. The hard disk drive 28, magnetic disk drive 29, and optical disk drive 31 are connected to the system bus 23
25 by a hard disk drive interface 33, a magnetic disk drive interface 34, and an optical drive interface 35, respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer readable instructions, data structures, program modules and other data for the personal computer 20. Although the

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exemplary environment described herein employs a hard disk, a removable magnetic disk 30 and a removable optical disk 32, it should be appreciated by those skilled in the art that other types of computer readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROM), and the like, may also be used in the exemplary operating environment. Other I/O devices 27, such as a display 36, keyboard 37, mouse 38, and the like may be included in the personal computer 20 and function in a known manner. For the sake of brevity, other components, such as a joystick, sound board and speakers are not illustrated in Figure 1.

The personal computer 20 may also include a network interface 36 to permit operation in a networked environment using logical connections to one or more remote computers, such as a remote computer 40. The remote computer 40 may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to the personal computer 20, although only a memory storage device 42 has been illustrated in Figure 1. The logical connections depicted in Figure 1 include a local area network (LAN) 43 and a wide area network (WAN) 44. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, the personal computer 20 is connected to the LAN 43 through the network interface 39. When used in a WAN networking environment, the personal computer 20 typically includes a modem 45 or other means for establishing communications over the wide area network 44, such as the Internet. The modem 45, which may be internal or external, permits communication with remote computers 46-50. In a networked environment, program modules depicted relative to the personal computer 20, or portions thereof, may be stored in the remote memory storage device 42 via the LAN 51 or stored in a

remote memory storage device 52 via the WAN 44. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

The present invention is embodied in a system 100 illustrated in the functional diagram of Figure 2. In a typical telephone communication, an originating telephone 102 is operated by a calling party to place a call to a destination telephone 104. The originating telephone generates signals that are detected by a central office switch 106 operated by a local exchange carrier (LEC) 108. The LEC 108 is the telephone service provider for the calling party. The originating telephone 102 is coupled to the central office switch 106 via a communication link 110. As those skilled in the art can appreciate, the communication link 110 may be a hard-wired connection, such as a fiber optic, copper wire, or the like. Alternatively, the communication link 110 may be a wireless communication link if the originating phone 102 is a cellular telephone or some other form of wireless telephone.

Similarly, the destination telephone 104 is coupled to a central office switch 116 operated by a local exchange carrier (LEC) 118. The destination telephone 104 is coupled to the central office switch 116 via a communication link 120. The communication link 120 may be a hard-wired communication link or a wireless communication link, as described above with respect to the communication link 110. The present invention is not limited by the specific form of communication link or central office switch.

The LEC 108 establishes a communication link with the LEC 118. As illustrated in Figure 2, the communication link between the LEC 108 and the LEC 118 is through a long distance carrier (LDC) 124. The LEC 108 establishes a communication link 126 with the LDC 124 which, in turn, establishes a communication link 128 with the LEC 118. If the telephone call from the originating telephone 102 to the destination telephone 104 is not a long distance

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call, the LDC 124 is not required. In this case, the communication link 126 may couple the LEC 108 directly to the LEC 118. The use of the system 100 with other telephone configurations are illustrated in other figures.

To place a telephone call, the calling party activates the originating telephone 102 to dial in the telephone number corresponding to the destination telephone number 104, thereby establishing the communication link 110 with the central office switch 106. In turn, the central office switch 106 establishes the communication link 126 (via the LDC 124, if necessary), thus establishing a communication link with the central office switch 116. In a conventional telephone system, the central office switch 116 establishes the communication link 120 to the destination telephone 104 causing the destination telephone to ring. If the subscriber picks up the destination telephone, a complete communication link between the originating telephone 102 and the destination telephone 104 has been established. This is sometimes referred to as "terminating" the telephone call. The specific telecommunications protocol used to establish a telephone communication link between the originating telephone 102 and the destination telephone 104 is well known in the art and need not be described herein. The preceding description of techniques used to establish the telephone communication link are provided only as a basis for describing the additional activities performed by the system 100.

With the system 100, the central office switch 116 does not initially establish the telephone communication link 120 with the destination telephone 104 to cause the telephone to ring. Instead, the central office switch 116 establishes a communication link 132 with a computer network 134, such as the Internet. As those skilled in the art can appreciate, the Internet is a vast multi-computer network coupled together by data links having various communication speeds. Although the Internet 134 may use a variety of different communication protocols, a well-known communication protocol used by the Internet is a Transmission Control Protocol/Internet Protocol (TCP/IP). The transmission of data on the Internet 134

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using the TCP/IP is known to those skilled in the art and need not be described in greater detail herein.

The central office switch 116 utilizes conventional telephone communication protocols, which may be different from the TCP/IP communication protocols used by the Internet 134. The system 100 includes a communication interface 136 to translate data between the two communication protocols. The communication interface 136 includes a telephone interface portion 138 and an Internet interface portion 140. The telephone interface portion 138 is coupled to the central office switch 116 via the communication link 132 such that communications occurring on the communication link 132 utilize the telephone communication protocol. The Internet interface portion 140 communicates via the Internet using conventional communication protocols, such as TCP/IP.

The communication interface 136 may be implemented on a computing platform that functions as a server. The conventional components of the computing platform, such as a CPU, memory, and the like are known to those skilled in the art and need not be described in greater detail herein. The telephone interface portion 138 may comprise an Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) to communicate with the central office switch 116. The ISDN PRI, which may be implemented on a plug-in computer card, provides information to the telephone interface portion 138, such as automatic number identification (ANI), dialed number identification service (DNIS), and the like. As is known, ANI provides the telephone number of the caller's telephone (e.g., the originating telephone 102) while the DNIS allows the number the caller dialed (e.g., the destination telephone 104) to be forwarded to a computer system. These data may be considered "keys" which may be used by the system 100 to identify the caller and the callee. Thus, the central office switch 116 provides information which may be used to access the affiliation list 150 for the destination telephone 104.

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The Internet interface portion 140 may be conveniently implemented with a computer network card mounted in the same computing platform that includes the ISDN PRI card. However, it is not necessary for satisfactory operation of the system 100 that the interface cards be co-located in the same computing platform. It is only required that the telephone interface portion 138 communicate with the Internet interface portion 140. The Internet interface portion 140 receives the incoming data (*e.g.*, the ANI, DNIS, and the like) and generates Internet compatible commands. The specific form of the Internet commands using, by way of example, TCP/IP, are within the scope of knowledge of one skilled in the art and need not be described herein. As will be described below, data provided by the central office switch 116 will be used to access data on the Internet and use that data to determine the manner in which a telephone call will be processed.

The Internet 134 stores an affiliation list 150, which may be established by the user of the destination telephone 104. Data stored within the affiliation list 150 is accessed by the central office switch 116 to determine the manner in which the call from the originating telephone 102 will be processed. Details of the affiliation list 150 are provided below. The Internet 134 also includes an Internet controller 152 which communicates with a user computer 154 via a network link 156. The communication between the user computer 154 and the Internet 134 is a conventional communication link used by millions of computers throughout the world. For example, the user computer 154 may be a personal computer (PC) containing a communication interface, such as a modem (not shown). The network link 156 may be a simple telephone communication link using the modem to communicate with the Internet 134. The Internet controller 152 functions in a conventional manner to communicate with the user computer 154 via the network link 156. Although the communication link 132 and the network link 156 are both communication links to the Internet, the network link 156 is a conventional computer connection established over a telephone line, a network connection, such

as an Ethernet link, or the like. This conventional network link 156 is significantly different from the communication link 132 between the central office switch 116 and the Internet 134. The central office switch 116 establishes the communication link 132 to access data on the Internet and uses that accessed data to determine how to process an incoming call for the destination telephone 104. The network link 156 is a computer-to-computer connection that may simply use a telephone as the physical layer to establish the network link.

In the system 100, the central office switch 116 receives an incoming call from the originating telephone 102 via the central office switch 106 and, optionally, the LDC 124. Rather than immediately establishing the communication link 120 and generating a ring signal at the destination telephone 104, the central office switch 116 establishes the communication link 132 and communicates with the Internet 134 via the communication interface 136. The purpose of such communication is to access the affiliation list 150 and thereby determine the manner in which the user of the destination telephone 104 wishes calls to be processed.

Figure 3 illustrates the system 100 for a telephone system configuration in which the originating telephone 102 and the destination telephone 104 are both serviced by the same local exchange carrier 108. The originating telephone 102 establishes the communication link 110 with the central office switch 106 in the manner described above. The central office switch 106 establishes the communication link 126 directly with the central office switch 116 without the need for the LDC 124 (see Figure 2). The central office switch 116 operates in the manner described above. That is, the central office switch 116 does not immediately establish the communication link 120, but does establish the communication link 132 with the Internet 134. For the sake of simplicity, Figure 3 does not illustrate the communication interface 136. However, those skilled in the art will appreciate that the central office switch 116 accesses the affiliation list 150 via the communication interface 136 (see Figure 2).

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For the sake of simplicity, Figure 3 also does not show the Internet controller 152 and the user computer 154. However, those skilled in the art can appreciate that those portions of the system may also be present in the embodiment illustrated in Figure 3. However, it should be noted that the user computer 154 and the Internet controller 152 need only be used to edit the affiliation list 150. The call processing by the central office switch 116 does not depend on the presence of the Internet controller 152 or the user computer 154. That is, the central office switch 116 accesses the affiliation list 150 via the communication interface 136 regardless of the presence of the user computer 154.

10 In yet another telephone system configuration, illustrated in Figure 4, the originating telephone 102 and the destination telephone 104 are not only serviced by the same local exchange carrier 108, but are connected to the same central office switch 116. However, the fundamental operation of the system 100 remains identical to that described above with respect to accessing the affiliation list 150. That is, the originating telephone 102 establishes the communication link 110 with the central office switch 116. However, the central office switch 106 need not establish the communication link 126 with any other central office switch since the destination telephone 104 is also connected to that same central office switch.

15
20 In this telephone system configuration, the central office switch 116 accesses the affiliation list 150 on the Internet 134 via the communication link 132 (see Figure 2) in the manner described above. For the sake of simplicity, Figure 4 does not illustrate the communication interface 136. However, those skilled in the art will recognize that the communication interface 136 operates to convert communication signals between telephone protocol used by the central office switch 106 and the Internet communication protocol used by the Internet 134. In addition, Figure 4 also does not illustrate the Internet controller 152 and the user computer 154. As noted above with respect to Figure 3, the Internet controller 152 and user

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computer 154 are not necessary for proper operation of the system 100. The user computer 154 is typically used in the system 100 to edit the affiliation list 150.

The affiliation list 150 is illustrated in greater detail in the functional block diagram of Figure 5. The affiliation list comprises a series of sublists, illustrated in Figure 3 as a forward list 160, a reverse list 162, a block list 164, and an allow list 166. The forward list 160 contains a list of Internet subscribers whose Internet activity a user wishes to monitor. This list is sometimes referred to as a "buddy" list. When the user operates the user computer 154 on the Internet 134, the Internet controller 152 accesses the forward list 160 via an affiliation list input/output (I/O) interface 170 to determine which Internet subscribers contained within the forward list are currently active on the Internet 134. In conventional Internet operation, the Internet controller 152 sends a message to the user computer 154 indicating which Internet subscribers on the forward list 160 are currently active on the Internet 134.

The forward list 160 is a list of Internet subscribers whose activity is reported to the user. Other Internet subscribers may have their own forward list (not shown) and may monitor the Internet activity of the user. When the user accesses the Internet 134 with the user computer 154, that activity can be monitored by others. With the system 100, it is possible to determine who is monitoring the user's Internet activity. The reverse list 162 contains a list of Internet subscribers who have placed the user in their forward list. That is, the reverse list 162 contains a list of Internet subscribers who have placed the user in their buddy list. With the reverse list 162, the user can determine who is monitoring his Internet activity.

The block list 164 contains a list of Internet subscribers that the user does not want to monitor his Internet activity. That is, the user's Internet activity will not be provided to any Internet subscriber contained in the block list 164. Thus, even if a particular Internet subscriber has placed the user on their forward list, the presence of that particular Internet subscriber's name on the block list 164 will

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prevent the user's Internet activity from being reported to the particular Internet subscriber. The use of the block list 164 provides certain security assurances to the user that their Internet activity is not being monitored by any undesirable Internet subscribers.

5 The allow list 166 contains a list of Internet subscribers for whom the user may wish to communicate with but whose Internet activity the user does not wish to monitor.

10 The system 100 combines the capabilities of the affiliation list 150 with telephone switching technology to filter incoming calls to the destination telephone 104. For example, the user may specify that only calls from Internet subscribers contained in the forward list 154 may contact the user via the destination telephone 104. Alternatively, the user may specify that a calling party whose name is contained in the forward list 160 or the allow list 166 may place a call to the destination telephone 104. As will be discussed in greater detail below, the system
15 100 allows the user to create general conditional processing, such as blocking calls or allowing calls. However, the user can also create specific conditional processing for individual callers or based on the user's current status or preferences.

20 The central office switch 116 accesses the affiliation list 150 via the communication link 132 and determines whether the calling party is in a list (e.g., the forward list 160) that the user wishes to communicate with. If the calling party is contained within an "approved" list, the central office switch 116 establishes the communication link 120 and sends a ring signal to the destination telephone 104. Thus, the user can pick up the telephone with the knowledge that the calling party is an individual with whom the user wishes to communicate.

25 Conversely, if the calling party is not contained within an approved list, such as the forward list 160 or the allow list 166, the central office switch 116 will not establish the communication link 120 with the destination telephone 104. Thus, the user will not be bothered by undesirable phone calls. In one embodiment,

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the central switch office simply will not establish the communication link 120 and the calling party will recognize that the call did not go through. Alternatively, the central office switch 116 may generate a signal indicating that the destination telephone 104 is busy. In this alternative embodiment, the calling party will receive
 5 a busy signal on the originating telephone 102. Thus, the user has the ability to filter incoming calls by creating a list of those individuals with whom the user wishes to communicate.

It should be noted that the affiliation list 150 may be dynamically altered by the user to add or delete individuals, change individuals from one list to
 10 another, or to change the call processing options for a particular list depending on the user's preferences. For example, the user may want to accept all calls from any source at certain times of the day. Under these circumstances, the user can edit the allow list 166 to accept calls from any calling party. Alternatively, the user may still maintain the block list 164 such that calls will not be processed from certain
 15 specified parties even if the user is willing to accept calls from any other source. Under other circumstances, the user may not wish to communicate with any individuals. In this instance, the user may indicate that all calling parties are on the block list 164. Thus, the central office switch 116 will access the Internet 134 in real-time and review data in the affiliation list 150 to thereby process incoming calls
 20 for the user in accordance with the rules present in the affiliation list.

The discussion above provides examples of the central office switch 116 processing calls from a calling party in accordance with their presence or absence of certain lists in the affiliation list 150. For example, a call from a party on the forward list 160 will be connected to the destination telephone 104 (see
 25 Figure 2) while a call from a party on the block list 164 will not be put through to the destination telephone. However, the system 100 also allows the selection of call processing options on an individual basis rather than simply on the presence or absence in a particular list. For example, the user can edit the allow list 166 to

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specify that certain individuals are "allowed" while other individuals may be allowed, conditionally allowed, or blocked all together. If the individual calling party has an associated status indicating that they are allowed, the central office switch 116 will process the incoming call and connect it to the destination telephone

- 5 104. If the individual calling party has an associated blocked status, the central office switch 116 will not process the call and will not connect it to the destination telephone 104.

- Furthermore, the user may attach conditional status to individual callers or to calling lists. Conditional status may be based on factors, such as the
- 10 time of day, current availability of the user, work status, or the like. For example, the user may accept calls from certain work parties during specified periods of the day (e.g., 9:00 a.m. - 11:00 a.m.), block calls from selected calling parties during other periods of time (e.g., 12:00 - 1:00 p.m.), or allow calls during a business meeting only from certain calling parties (e.g., the boss). These conditional status
- 15 criteria may be applied to individuals or to one or more lists in the affiliation list 150.

- Figure 6 illustrates sample data entries in the allow list 166. The allow list 166 may include data, such as a name, Internet subscriber name, and one or more phone numbers associated with the individual data entry. It should be noted
- 20 that the calling party need not have an Internet subscriber name for proper operation of the system 100. That is, the central office switch 116 accesses the allow list 166 utilizing the calling party number and need not rely on any email addresses or other Internet subscriber identification for proper operation. The allow list 166 may also include an email alias in addition to or in place of the Internet subscriber name.
- 25 Some Internet subscribers prefer to "chat" with other subscribers utilizing an alias rather than their actual Internet subscriber name. The data of Figure 6 illustrates one possible embodiment for the allow list 166. However, those skilled in the art can appreciate that the allow list 166 may typically be a part of a large database (not

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shown). Database operation is well known in the art, and need not be described in greater detail herein. The database or other form of the forward list 160 may be satisfactorily implemented using any known data structure for storage of data. For example, the various lists (e.g., the allow list 166, the reverse list 162, the block list 164 and the allow list 166) may all be integrated within a single database structure. The present invention is not limited by the specific structure of the affiliation list 150 nor by the form or format of data contained therein.

Rather than incoming call filtering on the basis of presence in a particular list, such as the allow list 166, as illustrated in Figure 6, the affiliation list 150 may contain status data on an individual basis. In this event, the central office switch 116 (see Figure 2) processes the incoming call in accordance with the designated status for that individual. In the example illustrated in Figure 7, the affiliation list 150 contains one individual with an "allowed" status, one individual with a "blocked" status, and one individual with a "conditional" status based on user-selected criteria. In the example of Figure 7, the user-selected criteria may be based on the particular phone from which the call is originating as well as the time of day in which the call is originated. For example, the user may wish to allow all calls from a particular number, such as an caller's work number. However, calls from another number, such as the caller's home phone, may be blocked. Other calls, such as from a caller's cellular telephone, may be allowed only at certain times of day. Figure 7 is intended to illustrate some of the call processing options that are available to the user. As can be appreciated, a variety of different conditional status criteria may be applied to one or more potential calling parties. However, a common feature of the system 100 is that the telecommunication system (e.g., the central office switch 116) determines calling party status on the basis of information stored on the Internet and processes the incoming call in accordance with the user-specified criteria. Moreover, the system 100 operates in real-time to process the incoming call in accordance with the user-specified criteria.

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The Internet 134 may be conveniently used as a storage area for the caller specified criteria. The advantage of such data storage on the Internet is that the data is widely accessible to the user. This provides a convenient mechanism for entering new caller data or editing existing caller data. The user can access the affiliation list 150 with the user computer 154 via the network link 156. In contrast, the central office switch 116 may access the affiliation list 150 via the communication link 132, which may typically be a high-speed communication link. In addition, Figures 2, 4, and 5 illustrate the central office switch 116 as the telecommunication component that accesses the Internet 134. It is convenient for operational efficiency to have the central office switch (e.g., the central office switch 116) to which the destination telephone 104 is connected perform such Internet access. It is at this stage of the telephone call processing that the telecommunication system may most conveniently determine the user-specified caller status. However, those skilled in the art will recognize that the status check may be performed by other portions of the telecommunication system, such as the central office switch 106, the LDC 124, or the like. Thus, the present invention is not limited by the particular telecommunication component that establishes the communication link with a network which the user-specified caller status data is stored.

In addition, the system 100 can be readily implemented as an "add-on" component of the telecommunication system and need not be integrated with the central office switch 116. For example, the conventional central office switch provides the ability to divert calls based on certain call conditions, such as "Call Forward No Answer," which may be used to divert an incoming call to voicemail or "Call Forward Busy," which may also divert the incoming call to voicemail. To implement the system 100 with an add-on processor, the system may optionally include a Switch to Computer Applications Interface (SCAI) 174 and a call filtering processor 176. The dashed lines of Figure 4 are intended to illustrate an alternative

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configuration of the system 100. This alternative configuration can also be implemented with other telephone system configurations, such as illustrated in Figures 2 and 3. The SCAI 174 is a telecommunication protocol that allows switches to communicate with external computers. Data, such as caller and callee telephone numbers, and status information, such as Call Forward Busy, are provided to the SCAI 174 by the central office switch 116.

The call filtering processor 176 performs the functions described above to process the call in accordance with the user-specified criteria. That is, the call filtering processor 176 receives caller and callee data from the SCAI 174 and accesses the affiliation list 150 via the communication interface 136 (see Figure 2). The call filtering processor 176 uses user-specified call processing criteria to generate instructions for the central office switch 116. The instructions are provided to the central office switch 116 via the SCAI 174. Those skilled in the art will appreciate that the SCAI 174 is but one example of the Open Application Interface (OAI) that can be used with the central office switch 116.

As noted above, the system 100 can process a call intended for the destination telephone 104, block a call, or generate a busy signal at the originating telephone 102. However, the system 100 also operates with voicemail and permits a number of different customized outgoing messages. Figure 4 illustrates a voicemail system 180 having a storage area containing one or more outgoing messages 182. For example, the voicemail system 180 can play an outgoing message 182 informing the caller that "the party you are calling only accepts calls from designated callers. Please leave a message." If calls are blocked only at certain times, the outgoing message 182 can say "the party you are calling does not accept calls between 11:30 a.m. and 1:00 p.m. Please leave a message or call back after 1:00 p.m." The outgoing message can also reflect callee availability by playing a message such as "The party you are calling is in a meeting. Please leave a message or call back in X minutes" where X reflects the amount of time before the meeting is expected to end.

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That information can be manually provided to the affiliation list 150 by the user or automatically derived from a computerized scheduling program on, by way of example, the user computer 154 (see Figure 2).

Computerized scheduling programs, such as Microsoft® Schedule Plus, can be used on the user computer 154 (see Figure 2). It is known that such scheduling programs can be accessed via a computer network or downloaded to a hand-held computing device to track appointments. The system 100 can access such computerized scheduling programs and download appointments and scheduled meetings into the affiliation list 150. The outgoing messages 182 can be automatically selected on the basis of the user's computerized schedule. Thus, the system 100 permits the user to schedule his day (e.g., meetings, lunch time, in office/available for calls, in office/unavailable for calls, etc.) on a computerized scheduling program and to process calls in accordance with the computerized schedule and even select outgoing messages automatically based on the user's schedule.

The operation of the system 100 is illustrated in the flowchart of Figure 7. At a start 200, the calling party has placed a call from the originating telephone 102 (see Figure 2) to the destination telephone 104. In step 202, the central office switch 116 has received call data from the originating telephone 102. The received call data includes the destination telephone number of the destination telephone 104 and identification data indicating the originating telephone 102 as the source of the present call. Use of automatic number identification (ANI) is a well-known technique for providing identification data indicating the originating telephone 102 as the source of the present call. While the specific implementation of ANI data, sometimes referred to as caller ID, may not be uniformly implemented throughout the United States, the ANI data is typically delivered between the first and second rings. In the present invention, the central office switch 116 (see Figure 2) does not initiate a ring signal to the destination telephone 104 until after

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determining the status of the calling party based on the ANI. In future implementations, telecommunication companies may transmit other forms of caller identification, such as caller name, Internet address, email alias, or the like. The system 100 operates satisfactorily with any form of caller identification. The only requirement for the system 100 is that some form of caller identification be provided. The call is processed in accordance with the user-specified criteria in the affiliation list 150 for the identified caller.

In step 204, the central office switch 116 (see Figure 2) establishes the communication link 132 with the Internet 134. Although step 204 illustrates the system 100 as actively establishing the communication link 132 with the Internet 134, those skilled in the art will recognize that the system 100 can utilize a continuous high-speed data link between the central office switch and the Internet. Thus, it is not necessary to establish a network link for each and every incoming call processed by the central office switch 116. As previously described, the communication interface 136 translates data between the telephone protocol and the Internet protocol. In step 206, the system 100 accesses the affiliation list 150 for the user (*i.e.*, the called party). In an exemplary embodiment, the telephone number of the destination telephone 104 or other callee identification is used as an index or pointer to a specific location within the database where the affiliation list 150 for the particular user may be found. Database operation in general, and techniques for locating specific items within a database in particular are known to those skilled in the art and need not be described herein.

In decision 210, the system 100 determines whether the caller identification data is on the forward list 160 (see Figure 3). If the caller identification data is present in the forward list, the result of the decision 210 is YES. In that event, the system 100 proceeds to Figure 7B where the call is processed in accordance with the rules associated with the forward list 160.

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If the caller identification data is not present in the forward list 160 (see Figure 3), the result of decision 210 is NO. In that event, the system 100 moves to decision 212 to determine whether the caller identification data is in the allow list 166. If the caller identification data is present in the allow list 166, the result of decision 214 is YES. In that event, the system 100 proceeds to decision 216 where the call is processed in accordance with the rules associated with the allow list 166. If the caller identification data is not present in the allow list 166, the result of decision 216 is NO.

In decision 218, the system 100 determines whether the caller identification data is present in the reverse list 162. If the caller identification data is present in the reverse list 162, the system 100 proceeds to the step 220 where the call is processed in accordance with the rules associated with the reverse list 162. If the caller identification data is not present in the reverse list, the result of decision 218 is NO. In that event, the system moves to decision 216 to determine whether the caller is present on the block list 164. If the caller is present on the block list 164, the result of decision 222 is YES. In that event, the system proceeds to step 224 where the call is processed in accordance with the rules associated with the block list. If the caller identification data is not present in the block list 164, the result of decision 222 is NO. This indicates that the caller identification data is not present in any of the user-specified lists in the affiliation list 150. In that event, the system moves to step 226 where the call may be processed in accordance with user-specified rules of processing anonymous or unidentified calls. The flowchart of Figure 8 illustrates the operation of the system 100 with multiple lists wherein the call processing rules are designated for each list. In this embodiment, the call is processed on the basis of the presence or absence of the caller identification data in a particular list. However, as previously discussed, the affiliation list 150 (see Figure 6B) may include user-specified status criteria for individual callers. In this embodiment, the system 100 processes the call on the basis of the user-specified

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status criteria associated with the individual caller rather than on the basis of the caller's presence or absence in a specific list. In that event, the system 100 may simply access the user affiliation list (see step 206 in Figure 7) and process the call in accordance with the user-specified status criteria for the individual caller. If the caller identification data is not present in the affiliation list 160, the call may be processed using user-specified call processing criteria for unidentified callers, as shown in step 226.

Thus, the system 100 allows the user to specify call processing rules for a plurality of different caller lists or for individual callers within a list. The caller lists may be readily edited in accordance with the changing desires of the user. The user may alter the call processing rules in accordance with various times of day, work conditions, or even the personal mood of the user. For example, the user may process all calls during certain times of the day, such as when the user is at work. However, when the user arrives home, subsequent calls may be processed in accordance with a different set of rules, such as accepting no calls during dinner time or after a certain time at night.

These rules may be applied differentially to different ones of the list in the affiliation list 150. For example, the user may accept calls from any calling party on the forward list 160 (see Figure 3) or the allow list 166 during the evening hours. However, after a certain time at night, the caller may accept calls only from calling parties on the forward list 160. Thus, the system 100 allows great flexibility in the user selection of calling rules and lists. The system 100 allows the user to filter incoming calls in accordance with generalized rules or in accordance with highly specific rules.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. For example, the system discussed herein uses, by way

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of example, the Internet 134 to store the affiliation list 150. However, the system 100 can be implemented with other computer networks or as a portion of a telephone switch, such as the central office switch 116. The telephone service provider can provide a customer with an affiliation list and some means to control
5 the list as a value-added telephone service. The central office switch 116 accesses the internal affiliation list and processes the incoming calls in accordance with the user-specified criteria contained therein. Accordingly, the invention is not limited except as by the appended claims.

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CLAIMS

What is claimed is:

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1. A system for user specification of call processing in a telephone network having a user telephone coupled to the telephone network, the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing;

a computer network access port used by the telephone network to access the data structure; and

a controller to receive an incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

2. The system of claim 1 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the controller using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

3. The system of claim 2 wherein the identification data is telephone automatic number identification data.

4. The system of claim 2 wherein the identification data is electronic mail identification data.

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5. The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call, the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone.

6. The system of claim 1 wherein the user-selectable criteria indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone.

7. The system of claim 6 wherein the controller blocking the incoming call generates a busy signal at an origination telephone from which the incoming call is originated.

8. The system of claim 6, further comprising an outgoing message system having an outgoing message, the controller blocking the incoming call and playing the outgoing message at an origination telephone from which the incoming call is originated.

9. The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the controller processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during a time period other than the user-selected time period.

10. The system of claim 9, further comprising an outgoing message system storing a plurality of outgoing messages, the controller selecting one of the plurality of outgoing messages wherein the outgoing message system plays the selected outgoing message at an origination telephone from which the incoming call is originated.

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11. The system of claim 10 wherein the incoming call arrives at a particular time other than the user-selected time period, the controller selecting the selected outgoing message based on the particular time of arrival of the incoming call.

12. The system of claim 1, further comprising a data editor to permit user entry and editing of the user-selectable criteria into the data structure.

13. The system of claim 12 wherein the data editor is a computer coupled to the computer network.

14. The system of claim 1 wherein the computer network is the Internet.

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15. The system of claim 1 wherein the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the controller using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

16. The system of claim 15, further comprising a data editor to permit user entry of the caller identification data into the data structure prior to receipt of the incoming call.

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17. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, the controller processing the incoming call and signaling

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the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

18. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, the controller blocking processing of the incoming call if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

19. The system of claim 18 wherein the controller blocking processing of the incoming call generates a busy signal at an origination telephone from which the incoming call is originated.

20. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls subject to user-selected time restrictions, the controller processing the incoming call in accordance with the time restrictions and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

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AS 21. A system for user specification of call processing in a telephone network having a user telephone coupled to the telephone network, the system comprising:

a data structure contained within a computer network and accessible by the telephone network, the data structure containing a plurality of caller lists each having associated user-selectable criteria for call processing;

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a computer network access port used by the telephone network to access the data structure; and

a controller on the telephone network to receive an incoming call having origination data indicative of a caller and destination data indicating the call is designated for the user telephone, the controller accessing the data structure via the computer network access port to determine which of the plurality of caller lists contains the origination data, the controller processing the incoming call in accordance with the user-selectable criteria associated with the caller list containing the origination data.

22. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call, the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone. 5

23. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone. 6

24. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call during a user-selected time period, the controller processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period. 9

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25. The system of claim 21, further comprising a data editor to permit user entry and editing of the user-selectable criteria into the data structure.

26. The system of claim 21 wherein the computer network is the Internet.

27. The system of claim 21 wherein the telephone network is a public switched telephone network.

28. A computer-readable medium containing computer-executable instructions for call processing in a telephone network having a user telephone coupled to the telephone network by performing the steps of:

accepting an incoming call designated for the user telephone;
accessing a data structure contained within a computer network independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure; and
processing the incoming call in accordance with the user-selectable criteria.

29. The computer-readable medium of claim 28, further comprising computer-executable instructions for performing the steps of generating call processing rules based on the user-selectable criteria and storing the call processing rules on the computer network in association with a caller list.

30. The computer-readable medium of claim 29 wherein the computer-executable instructions for generating call processing rules are performed on a computer coupled to the computer network.

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36. The computer-readable medium of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the computer-readable medium containing computer-executable instructions for performing the steps of processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, and blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period. 9

37. The computer-readable medium of claim 28 wherein the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the computer-readable medium containing computer-executable instructions for performing the steps for accessing the data structure using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and the processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures. 15

38. A method for user specification of call processing in a telephone network having a user telephone coupled to the telephone network, the method comprising:

- accepting an incoming call designated for the user telephone;
- accessing a data structure contained within a computer network independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure; and
- processing the incoming call in accordance with the user-selectable criteria. 1

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39. The method of claim 38, further comprising generating call processing rules based on the user-selectable criteria and storing the call processing rules on the computer network in association with a caller list.

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40. The method of claim 39 wherein generating call processing rules is performed on a computer coupled to the computer network.

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41. The method of claim 38 wherein the computer network is the Internet.

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42. The method of claim 38 wherein the telephone network is a public switched telephone network.

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43. The method of claim 38 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the accessing of the data structure using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

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44. The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call, the processing the incoming call comprising establishing a link with the user telephone and generating a ring signal at the user telephone.

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45. The method of claim 38 wherein the user-selectable criteria indicates no permission to process the incoming call, the processing the incoming call comprising blocking the incoming call and not generating a ring signal at the user telephone.

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46. The method of claim 45, further comprising generating a busy signal at an origination telephone from which the incoming call is originated. 7

47. The method of claim 45, further comprising playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone. 10

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48. The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the processing the incoming call comprising processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, and blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period. 9

49. The method of claim 38 wherein the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the accessing the data structure using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and the processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures. 15

50. The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, the processing the incoming call comprising signaling the

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user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures. 17

51. The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, the processing the incoming call comprising not establishing a communication link with the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures. 18

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SYSTEM AND METHOD FOR USER AFFILIATION
IN A TELEPHONE NETWORK

ABSTRACT OF THE DISCLOSURE

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A telecommunication system combines telephone technology and Internet technology to establish one or more user-specified affiliation lists. The affiliation lists are stored on the Internet and are accessible by the user and by the telecommunication portion of the system. The affiliation lists are used to process incoming calls to the user's destination telephone number. A central office switch receives the call being directed to the destination telephone number and uses a communication link with the Internet to access the user's affiliation lists. The incoming call is processed in accordance with the user-specified rules in the affiliation lists. The user may accept all incoming calls, no incoming calls, or incoming calls only from specified parties. The call processing rules may be readily edited by the user and can also include alternative call processing rules that vary in accordance with the time of day or with the user's personal desires.

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DECLARATION AND POWER OF ATTORNEY

As the below-named inventor, I declare that:

My residence, post office address, and citizenship are as stated below under my name.

I believe I am the original, first, and sole inventor of the invention entitled "SYSTEM AND METHOD FOR USER AFFILIATION IN A TELEPHONE NETWORK," which is described and claimed in the foregoing specification and for which a patent is sought.

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to herein (if any).

I acknowledge my duty to disclose information of which I am aware which is material to the patentability and examination of this application in accordance with 37 C.F.R. § 1.56(a).

We hereby appoint RICHARD W. SEED, Reg. No. 16,557; ROBERT J. BAYNHAM, Reg. No. 22,846; EDWARD W. BULCHIS, Reg. No. 26,847; GEORGE C. RONDEAU, JR., Reg. No. 28,893; DAVID H. DEITS, Reg. No. 28,066; WILLIAM O. FERRON, JR., Reg. No. 30,633; PAUL T. MEIKLEJOHN, Reg. No. 26,569; DAVID J. MAKI, Reg. No. 31,392; RICHARD G. SHARKEY, Reg. No. 32,629; DAVID V. CARLSON, Reg. No. 31,153; KARL R. HERMANN, Reg. No. 33,507; DAVID D. MCMASTERS, Reg. No. 33,963; MICHAEL J. DONOHUE, Reg. No. 35,859; CHRISTOPHER J. DALEY-WATSON, Reg. No. 34,807; STEVEN D. LAWRENZ, Reg. No. 37,376; ROBERT G. WOOLSTON, Reg. No. 37,263; ELLEN M. BIERMAN, Reg. No. 38,079; PAUL T. PARKER, Reg. No. 38,264; ANN T. KADLECEK, Reg. No. 39,244; DAVID W. PARKER, Reg. No. 37,414; BRIAN G. BODINE, Reg. No. 40,520; FRANK ABRAMONTE, Reg. No. 38,066; E. RUSSELL TARLETON, Reg. No. 31,800; FREDERICK M. FLIEGEL, Reg. No. 36,138; THOMAS L. EWING, Reg. No. 34,328; KEVIN S. COSTANZA, Reg. No. 37,801; DALE C. BARR, Reg. No. 40,498; KEVIN S. ROSS, Reg. No. 42,116; PAUL F. RUSYN, Reg. No. 42,118; JOHN M. WECHKIN, Reg. No. 42,216; THOMAS E. LOOP, Reg. No. 42,810; STEPHEN J. ROSENMAN, Reg. No. 43,058; BRIAN L. JOHNSON, Reg. No. 40,033; JAMES D. WHITE, Registration No. 43,985; KIMTON N. ENG, Registration No. 43,605; SUSAN DENISE BETCHER, Registration No. 43,498; DENNIS M. de GUZMAN, Registration No. 41,702; and JANE E.R. POTTER, Registration No. 33,332, comprising the firm of SEED AND BERRY LLP, 6300 Columbia Center, Seattle, Washington 98104-7092; along with KATIE E. SAKO, Reg. No. 32,628, and DANIEL D. CROUSE, Reg. No. 32,022, of Microsoft Corporation, One Microsoft Way, Redmond, Washington 98052-6399, as our attorneys to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. Please direct all

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correspondence to Michael J. Donohue at SEED AND BERRY LLP, 6300 Columbia Center, Seattle, Washington 98104-7092, telephone calls to (206) 622-4900 and telecopies to (206) 682-6031.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that the making of willfully false statements and the like is punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of any patent issuing from this patent application.


Stephen Mitchell Liffick

Date 3/22/99

Residence : City of Seattle, County of King
State of Washington
Citizenship : United States of America
P.O. Address : 4729 51st Avenue South
Seattle, Washington 98118

U:\ShannonR\0999 (661005.454)

09275689 032490
661220 68954260

MSAL 00569

APPROVED	DATE	BY	CLASS	SUBCLASS
	05/16/02		379	211.02
DRAFTSMAN				

6421439

6421439-6895/260

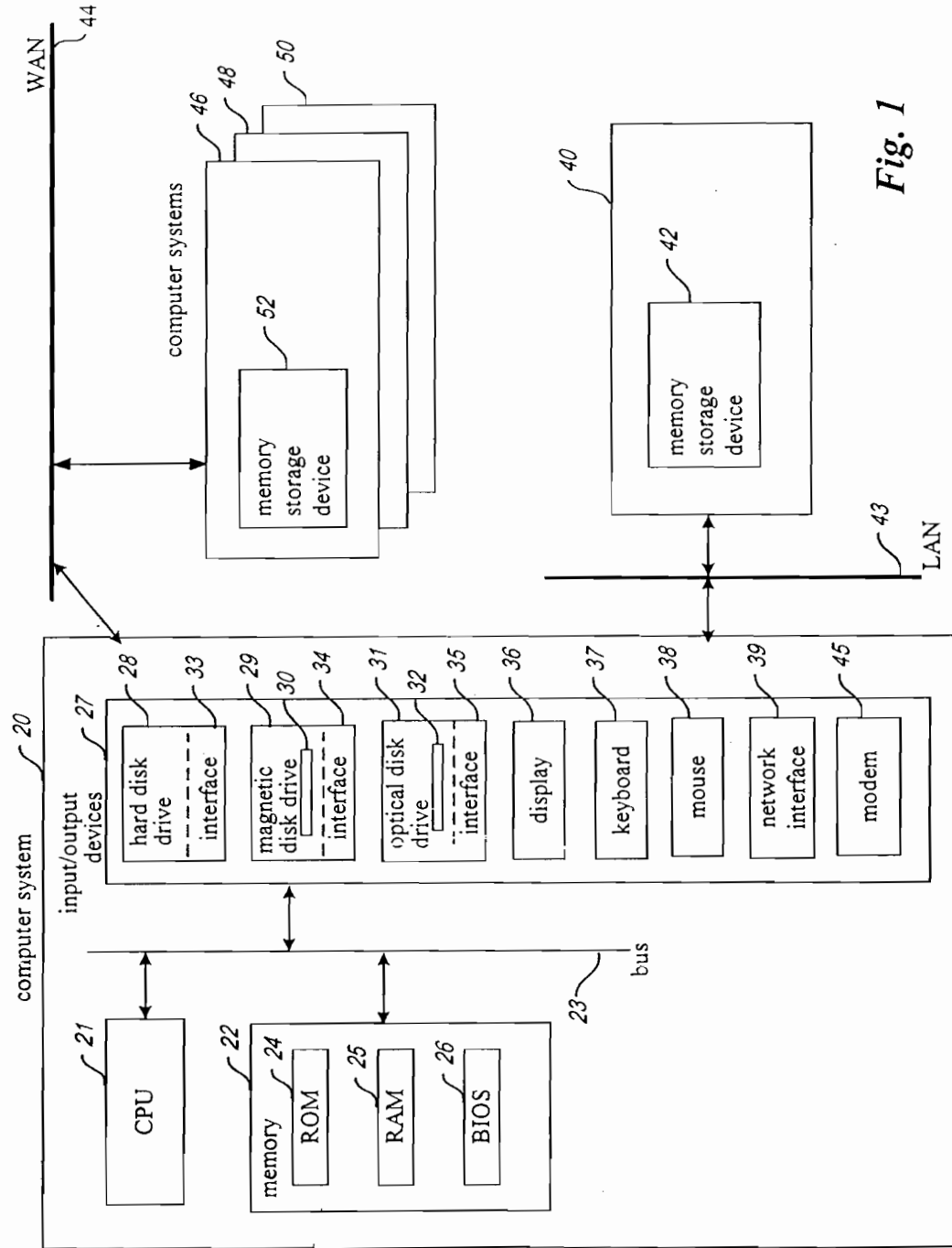


Fig. 1

MSAL 00570

PRESS MAIL NO.: EM150272273US
CKET NO.: 664005.454
APPLICANT: Stephen Mitchell Liffick
TITLE: SYSTEM AND METHOD FOR USER AFFILIATION
IN A TELEPHONE NETWORK

Figure 1 of 8
Sheet 1 of 8

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MSAL 00571

APPROVED	OG. FIG. 2	
BY	CLASS	SUBCLASS
HAFTSMAN	379	211.02

654260-6895260

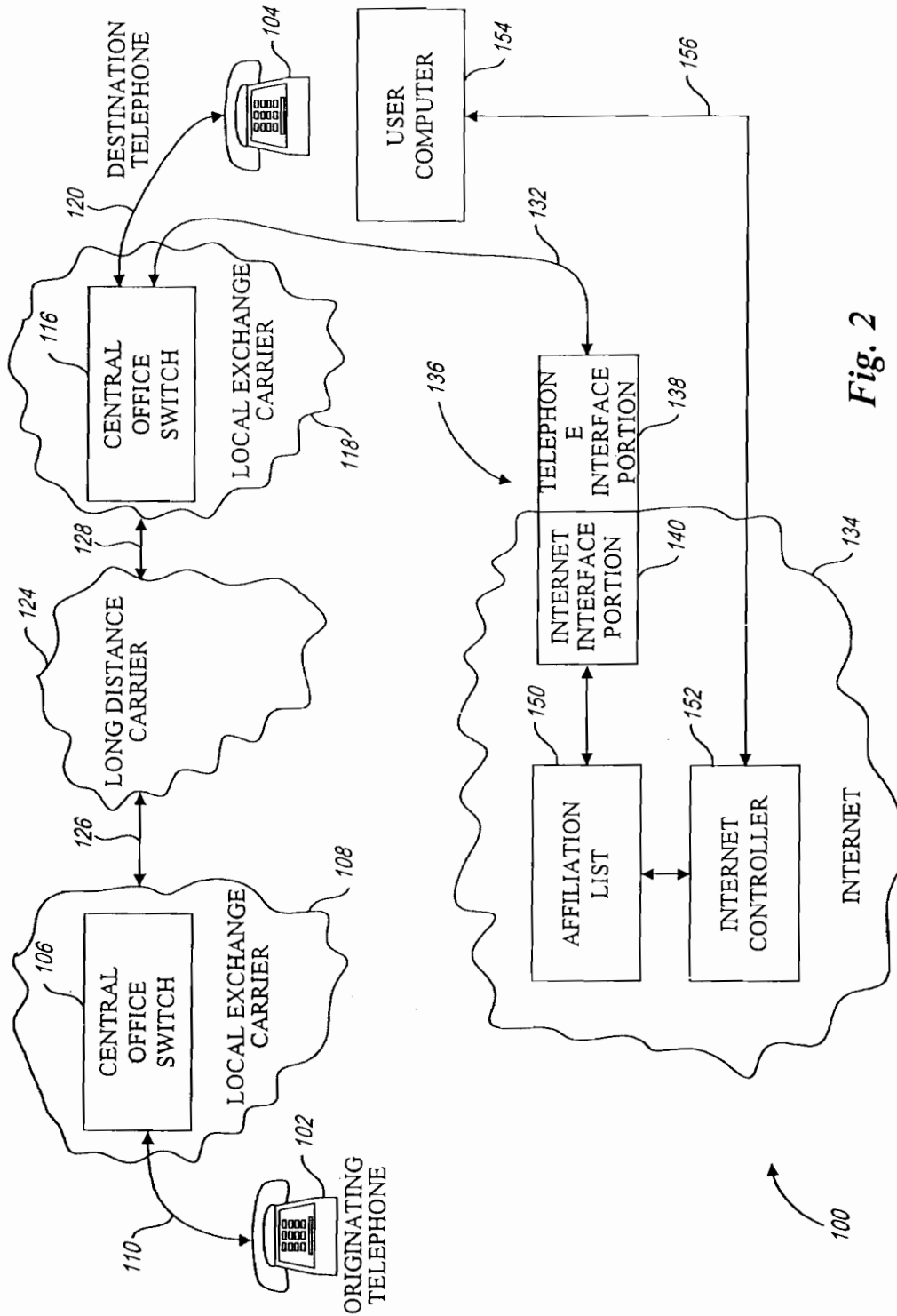


Fig. 2

EXPRESS MAIL NO.: EM150272273US
DOCKET NO.: 664005.454
APPLICANT: Stephen Mitchell Liffick
TITLE: SYSTEM AND METHOD FOR USER AFFILIATION
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Figure 2 of 8
Sheet 2 of 8

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MSAL-00573

APPROVED BY	CLASS	SUBCLASS
DRAFTSMAN		

6642ED" 68954260

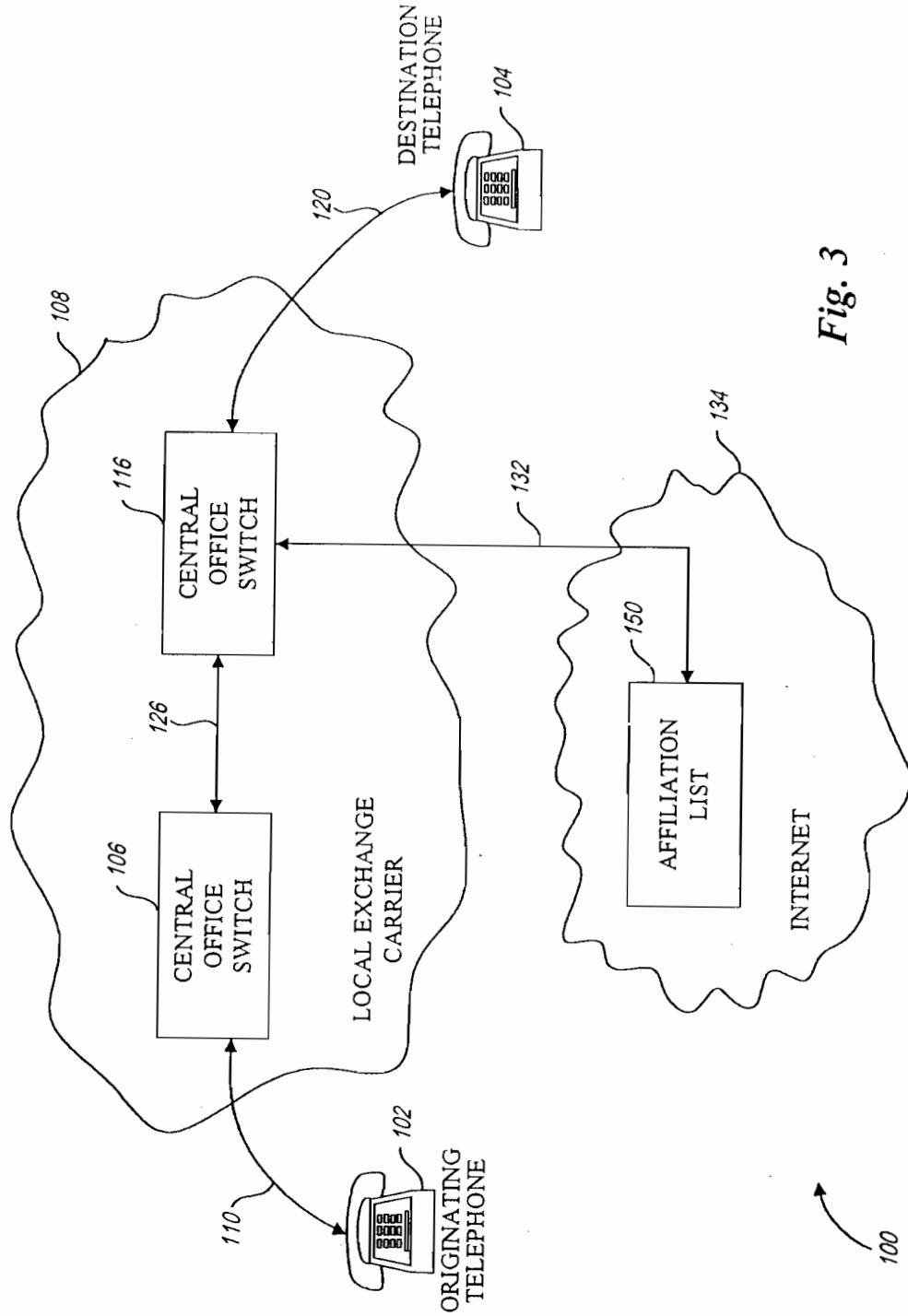


Fig. 3

EXPRESS MAIL NO.: EM150272273US
JACKET NO.: 664005.454
APPLICANT: Stephen Mitchell Liffick
TITLE: SYSTEM AND METHOD FOR USER AFFILIATION
IN A TELEPHONE NETWORK

Figure 3 of 8
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MSAL 00575

APPROVED	FIG.
CLASS	SUBCLASS
DRAFTSMAN	

6642ED" 6895/260

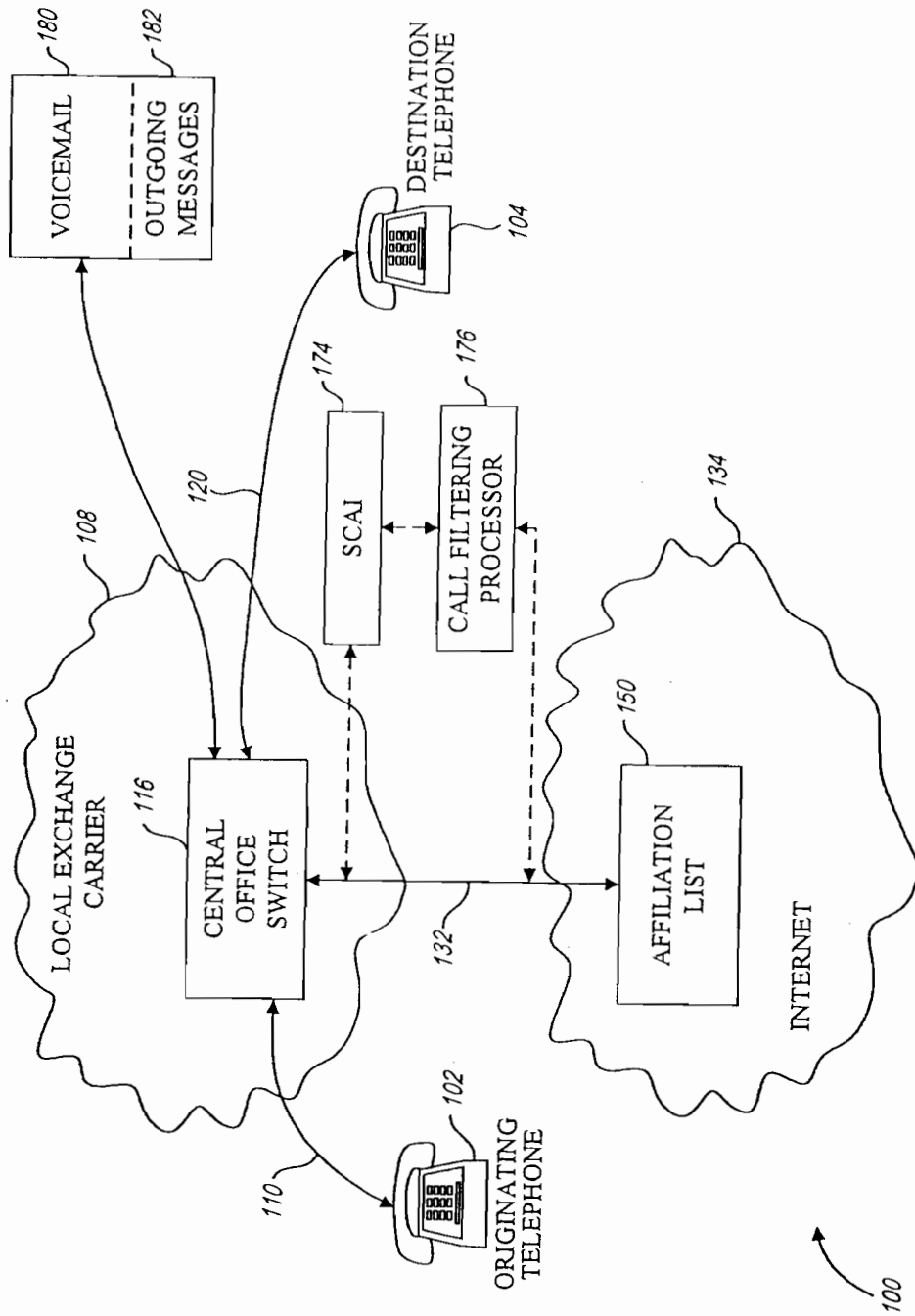


Fig. 4

PRESS MAIL NO.: EM150272273US
CKET NO.: 664005.454
APPLICANT: Stephen Mitchell Liffick
TITLE: SYSTEM AND METHOD FOR USER AFFILIATION
IN A TELEPHONE NETWORK
Figure 4 of 8
Sheet 4 of 8

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MSAL 00577

APPROVED	18	46
BY	CLASS	SUBCLASS
DRAFTSMAN		

002/559-0320-0395/260

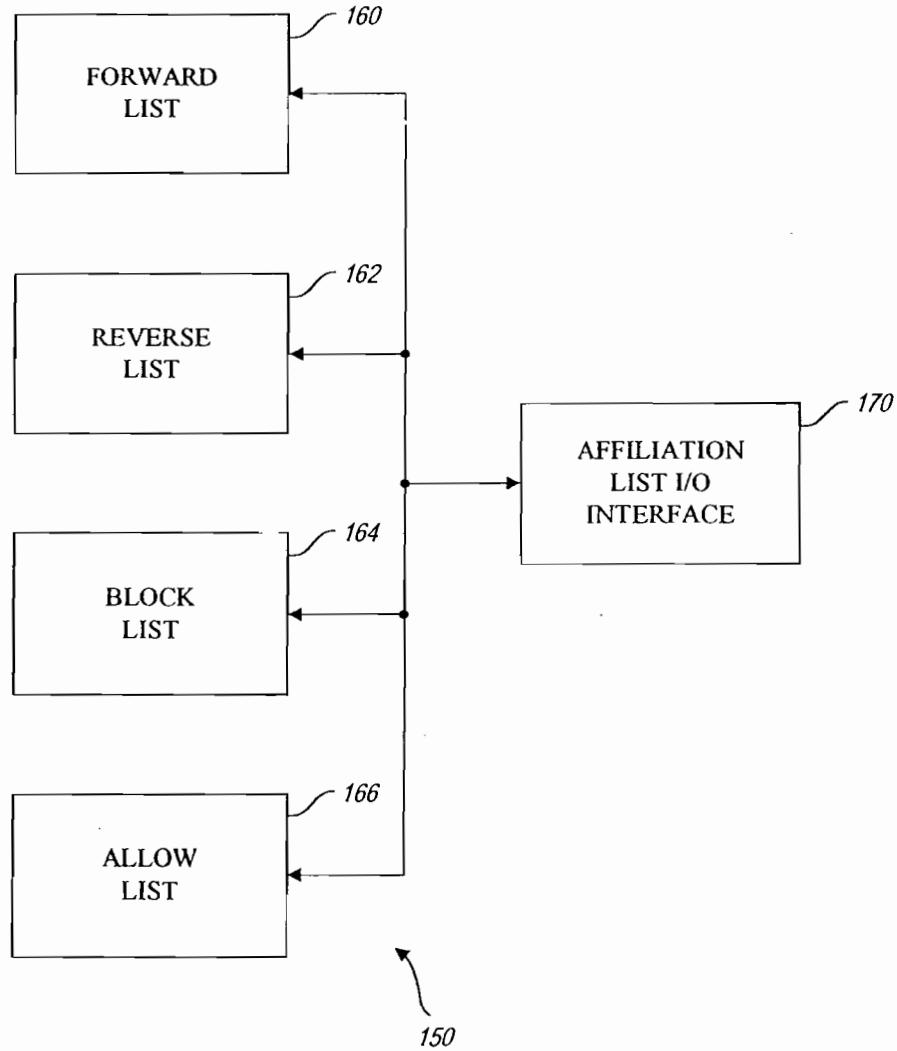


Fig. 5

ESS MAIL NO.: EM150272273US
BUCKET NO.: 664005.454
APPLICANT: Stephen Mitchell Liffick
TITLE: SYSTEM AND METHOD FOR USER AFFILIATION
IN A TELEPHONE NETWORK

Figure 5 of 8
Sheet 5 of 8

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MSAL 00579

APPROVED	DATE	BY	CLASS	SUBCLASS
DRAFTSMAN				

00275689 032490

Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
.	
.	
.	
.	
.	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
.	
.	
.	
.	
.	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239

166

Fig. 6

PRESS MAIL NO.: EM150272273US
CKET NO.: 664005.454
APPLICANT: Stephen Mitchell Liffick
TITLE: SYSTEM AND METHOD FOR USER AFFILIATION
IN A TELEPHONE NETWORK
Figure 6 of 8
Sheet 6 of 8

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MSAL 00581

Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239
Status	Conditional
Phone 1	- Allowed
Phone 2	- Allowed 9:00 a.m. - 11:30 a.m.
Phone 3	- Blocked

- 150

RESS MAIL NO.: EM150272273US
CKET NO.: 664005.454
APPLICANT: Stephen Mitchell Liffick
TITLE: SYSTEM AND METHOD FOR USER AFFILIATION
IN A TELEPHONE NETWORK

Figure 7 of 8
Sheet 7 of 8

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MSAL 00583

CLASS SUBCLASS

09/25/2008 16:42:00

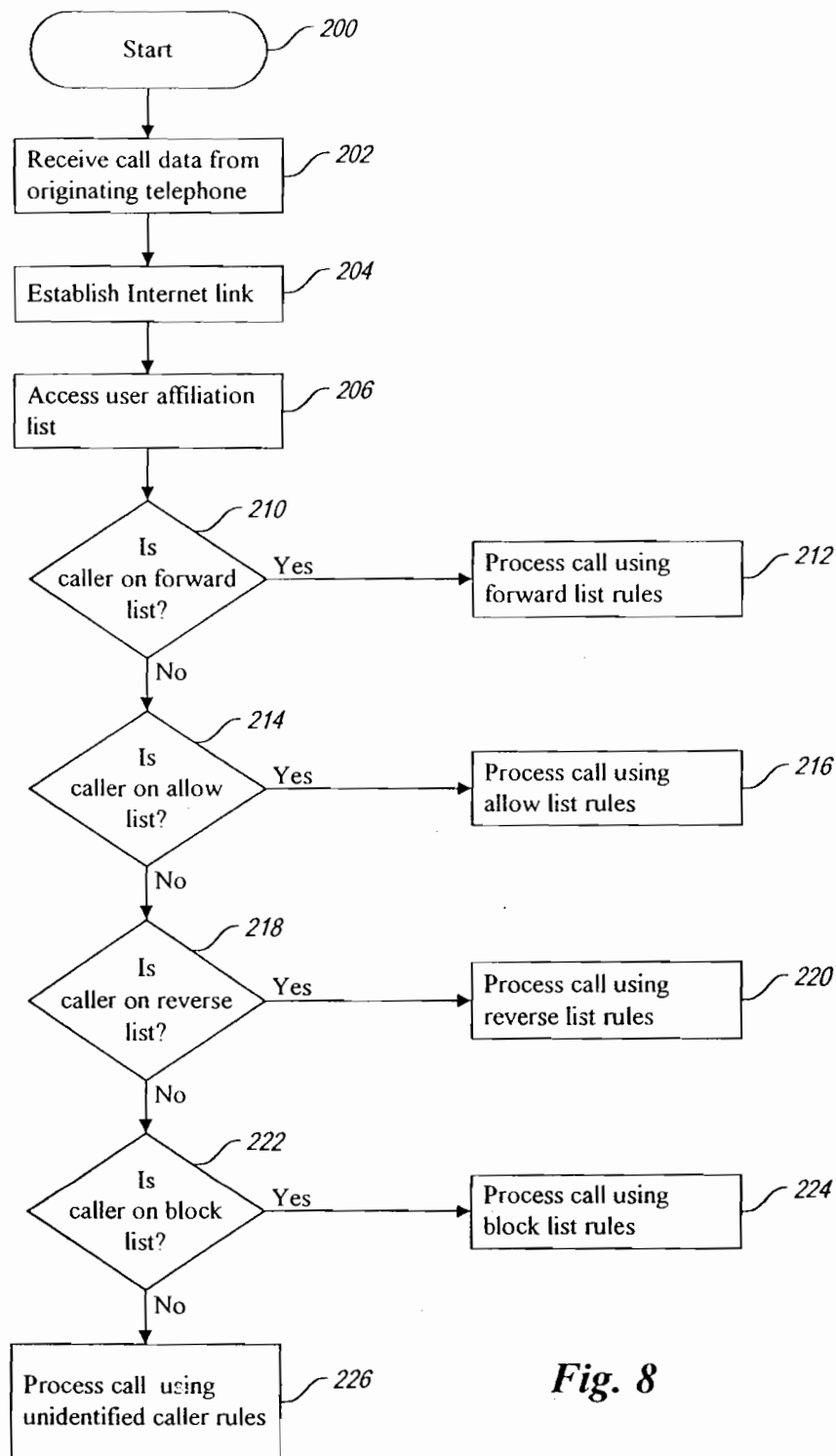


Fig. 8

PRESS MAIL NO.: EM150272273US
664005.454
CKET NO.: Stephen Mitchell Liffick
APPLICANT: SYSTEM AND METHOD FOR USER AFFILIATION
TITLE: IN A TELEPHONE NETWORK
Figure 8 of 8
Sheet 8 of 8

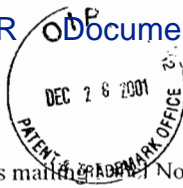
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7

MSAL 00585

Express mailing No. EL 795 866 772 US

PATENT APPLICATION
Docket No. 13768.67.19



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1/6/02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)	
)	
Stephen Mitchell Liffick)	
)	
Serial No.:)	Art Unit
)	2642
Confirmation No.:)	
)	
Filed:)	
)	
For:)	
)	
SYSTEM AND METHOD FOR USER)	
AFFILIATION IN A TELEPHONE NETWORK)	
)	
Examiner:)	
)	
Benny Q. Tieu)	

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JAN 04 2002

Technology Center 2600

Box RESPONSES
Assistant Commissioner for Patents
Washington, DC 20231

Dear Sir: .

Responsive to the Office Action dated July 30, 2001 (Paper No. 2), Applicant respectfully requests entry of the following amendments and reconsideration of the pending claims in view of the matters discussed at the Examiner Interview of October 17, 2001, and the further remarks herein.

AMENDMENT "A" AND REMARKS

In the Claims:

Please amend claims 1, 8, 15, 17-18, 21, 28-39, 43-45, and 48-51 as follows:

AI

1. (Amended) In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a system for processing an incoming call from a subscriber to a user in the telephone network according to user specifications, the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing, wherein the data structure stores the user-selectable criteria in one or more lists that are used in filtering an incoming call and wherein some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the one or more lists over the computer network access port; and

a controller to receive the incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

2

8. (Amended) The system of claim 6, further comprising an outgoing message system having an outgoing message, the controller blocking the incoming call and playing the outgoing message at an origination telephone.

A3

15. (Amended) The system of claim 1 wherein each of the one or more lists of the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the controller using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

f4

17. (Amended) The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, the controller processing the incoming call and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

18. (Amended) The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, the controller blocking processing of the incoming call if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

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X

AS

21. (Amended) In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a system for user specification of call processing in the telephone network, the system comprising:

a data structure contained within a computer network and accessible by the telephone network, the data structure containing a plurality of caller lists each having associated user-selectable criteria for call processing, wherein some of the plurality of caller lists are conditioned according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the plurality of caller lists; and

a controller on the telephone network to receive an incoming call having origination data indicative of a subscriber and destination data indicating the call is designated for the user telephone, the controller accessing the plurality of caller lists in the data structure via the computer network access port to determine which of the plurality of caller lists contains the origination data, the controller processing the incoming call in accordance with the user-selectable criteria associated with the caller list containing the origination data.

A4

28. (Amended) In a system where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a computer program product for implementing a method for processing a call from a subscriber to a user over a telephone network, the computer program product comprising:

a computer readable medium having computer executable instructions for performing the method, the method comprising:

accepting an incoming call designated for the user telephone;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call in accordance with the user-selectable criteria.

29. (Amended) The computer program product of claim 28, further comprising:
generating call processing rules based on the user-selectable criteria; and
storing the call processing rules on the computer network in association with a caller list.

30. (Amended) The computer program product of claim 29 wherein generating call processing rules is performed on a computer coupled to the computer network.

37

X

31. (Amended) The computer program product of claim 28 wherein the data structures store the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the method further comprising accessing the data structure using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

A6
cont.

32. (Amended) The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call, the method comprising:

processing the incoming call comprising establishing a link with the user telephone; and

generating a ring signal at the user telephone.

✓ 33. (Amended) The computer program product of claim 28 wherein the user-selectable criteria indicates no permission to process the incoming call, the method further comprising

processing the incoming call comprising blocking the incoming call; and

not generating a ring signal at the user telephone.

34. (Amended) The computer program product of claim 33, further comprising generating a busy signal at an origination telephone from which the incoming call is originated.

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Curtis

35. (Amended) The computer program product of claim 34, further comprising playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone.

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36. (Amended) The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the method further comprising:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone; and

blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

37. (Amended) The computer program product of claim 28 wherein the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the method further comprising:

accessing the data structure using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data; and

processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

38. (Amended) In a system including a telephone network and a computer network where an originating telephone connects with a user telephone over the telephone network, a method for processing a call from the originating telephone to the user telephone according to user specifications, the method comprising:

A6
comb1.
accepting an incoming call designated for the user telephone from an originating telephone of a subscriber;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call of the subscriber in accordance with the user-selectable criteria.

39. (Amended) The method of claim 38, further comprising generating call processing rules based on the user-selectable criteria and storing the call processing rules on the computer network in association with a caller list that is associated with the data structure.

A7
43. (Amended) The method of claim 38 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, wherein accessing a data structure further comprises using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

A
cont.

44. (Amended) The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call, wherein processing the incoming call further comprises establishing a link with the user telephone and generating a ring signal at the user telephone.

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45. (Amended) The method of claim 38 wherein the user-selectable criteria indicates no permission to process the incoming call, wherein processing the incoming call further comprises blocking the incoming call and not generating a ring signal at the user telephone.

A8

48. (Amended) The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, wherein [the] processing the incoming call further comprises:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone;
blocking the incoming call; and
not generating a ring signal at the user telephone during time periods other than the user-selected time period.

49. (Amended) The method of claim 38 wherein the data structure comprises a plurality of data substructures each storing caller identification and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, wherein accessing the data structure further comprises using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

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50. (Amended) The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, wherein processing the incoming call further comprises signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

51. (Amended) The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, wherein processing the incoming call further comprises not establishing a communication link with the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

44

X

REMARKS

Applicants and applicants' attorney express appreciation to the Examiner for the courtesies extended during the recent interview held on October 17, 2001. The claim amendments made by this paper are consistent with the proposals discussed, and the agreements reached, during the interview.

The Office Action of July 30, 2001, rejected claims 1-3, 5-13, 15-25, 27-40, and 42-51 under 35 § 102(b) as being anticipated by U.S. Patent No. 5,329,578 to Brennan. The Office Action also rejected claims 4, 14, 26, and 41 as being unpatentable over Brennan in view of U.S. Patent No. 6,005,870 to Leung.

The communication services taught by Brennan are illustrated, for example, by Figures 2a-2g and by Figures 3a-3e. Figures 2a-2g describe the flow of information at the caller interface when an individual is calling a user and describe what happens to an incoming call of the caller. Figures 3a-3e describe a user service interface illustrating how a menu is accessed by a user and how a user is able to change or set the user specifications that determine how an incoming call is processed. With regard to Figures 2a-2g, Brennan teaches that the flow of information is fixed and is not dependent on any particular status or activity of the user or of the caller and that the flow of information is determined by the user's requirements for that particular caller.

For example, Brennan teaches that if the incoming call includes calling line identification (CLID), then the profile of the user or subscriber is accessed to determine whether the CLID matches one of the CLIDs of the callers on the user's caller list, which determines how to treat the incoming call. *See* Brennan col. 11, lines 40-45. If the CLID of the caller is present in the caller list, then the special treatment, as indicated in the caller list for that caller, is taken.

Otherwise, the default treatment of an incoming call is assumed in this example. Thus, the treatment of an incoming call is dependent on a caller list that does not change. More specifically, actions or activity of callers on a telephone network or on a computer network have no effect on the caller list or on other user requirements for callers.

This is evident in Brennan, where a user is required to call a special number in order to access and/or alter the user requirements for different callers. *See Brennan col. 13, lines 7-15.* This is plainly illustrated in Figure 3a, where the user is able to access and change the caller lists and user requirements over the telephone network. Thus, Brennan teaches that the user requirements or the caller lists do not change unless the user expressly changes the user requirements or unless the user specifically requests a system operator to make the changes to the user requirements. *See Brennan col. 13, lines 14-16.*

In contrast to Brennan, claim 1 as amended recites that the one or more lists used in filtering an incoming call change according to current activity of the subscribers (e.g., persons making the calls), or according to current activity of the user (e.g., intended recipient of the call). In one example, the current activity of the subscriber and/or the user does not typically occur on the telephone network. Instead the current activity of the subscriber and/or the user usually occurs on a computer network. The ability to process an incoming call on a telephone network according to activity on a computer network is not taught or suggested by Brennan.

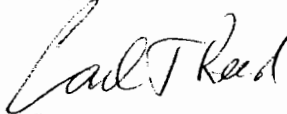
For at least these reasons and for the reasons discussed at the interview, Brennan does not teach or anticipate claim 1 as amended and claim 1 is believed to be in condition for allowance. For similar reasons, the other independent claims, namely claims 21, 28, and 38, are not taught or anticipated by Brennan and are in condition for allowance. The remaining dependent claims,

which depend from one of the independent claims, are in condition for allowance for similar reasons.

In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

Dated this 28 day of December, 2001.

Respectfully submitted,



CARL T. REED
Attorney for Applicant
Registration No. 45,454



022913

PATENT TRADEMARK OFFICE

G:\DATA\WPDOCS2\CTR\OFFICE ACTIONS\13768.67.19 AMENDMENT A.DOC

VERSION WITH MARKINGS TO CHANGES MADE
(13768.67.19)

In the claims:

1. (Amended) In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a [A] system for processing an incoming call from a subscriber to a user in the telephone network according to user specifications [user specification of call processing in a telephone network having a user telephone coupled to the telephone network], the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing, wherein the data structure stores the user-selectable criteria in one or more lists that are used in filtering an incoming call and wherein some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the one or more lists over the computer network access port; and

a controller to receive [an] the incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

VERSION WITH MARKINGS TO CHANGES MADE
(13768.67.19)

8. (Amended) The system of claim 6, further comprising an outgoing message system having an outgoing message, the controller blocking the incoming call and playing the outgoing message at an origination telephone [from which the incoming call is originated].

15. (Amended) The system of claim 1 wherein [the] each of the one or more lists of the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the controller using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

17. (Amended) The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, the controller processing the incoming call and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

VERSION WITH MARKINGS TO CHANGES MADE
(13768.67.19)

18. (Amended) The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, the controller blocking processing of the incoming call if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

VERSION WITH MARKINGS TO CHANGES MADE
(13768.67.19)

21. (Amended) In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a [A] system for user specification of call processing in [a] the telephone network [having a user telephone coupled to the telephone network], the system comprising:

a data structure contained within a computer network and accessible by the telephone network, the data structure containing a plurality of caller lists each having associated user-selectable criteria for call processing, wherein some of the plurality of caller lists are conditioned according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the plurality of caller lists; and

a controller on the telephone network to receive an incoming call having origination data indicative of a [caller] subscriber and destination data indicating the call is designated for the user telephone, the controller accessing the plurality of caller lists in the data structure via the computer network access port to determine which of the plurality of caller lists contains the origination data, the controller processing the incoming call in accordance with the user-selectable criteria associated with the caller list containing the origination data.

VERSION WITH MARKINGS TO CHANGES MADE
(13768.67.19)

28. (Amended) In a system where subscribers call a user over a telephone network,
wherein a user telephone is coupled with the telephone network, a computer program product [A
computer-readable medium containing computer-executable instructions] for implementing a
method for processing a call from a subscriber to a user over [call processing in] a telephone
network [having a user telephone coupled to the telephone network by performing the steps of],
the computer program product comprising:

a computer readable medium having computer executable instructions for
performing the method, the method comprising:

accepting an incoming call designated for the user telephone;

accessing a data structure contained within a computer network that is
independent of the telephone network to retrieve user-selectable criteria for call
processing stored within the data structure, wherein some of the user-selectable
criteria is conditioned on current activity of subscribers on the computer network
or according to current activity of the user on the computer network; and

processing the incoming call in accordance with the user-selectable
criteria.

29. (Amended) The [computer-readable medium] computer program product of
claim 28, further comprising: [computer-executable instructions for performing the steps of]

generating call processing rules based on the user-selectable criteria; and

storing the call processing rules on the computer network in association with a
caller list.

VERSION WITH MARKINGS TO CHANGES MADE
(13768.67.19)

30. (Amended) The [computer-readable medium] computer program product of claim 29 wherein [the computer-executable instructions for] generating call processing rules [are] is performed on a computer coupled to the computer network.

31. (Amended) The [computer-readable medium] computer program product of claim 28 wherein the data structures store[s] the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, [the computer-readable medium containing computer-executable instructions for performing the steps] the method further comprising accessing [of] the data structure using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

VERSION WITH MARKINGS TO CHANGES MADE
(13768.67.19)

32. (Amended) The [computer-readable medium] computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call, the [computer-readable medium containing computer-executable instructions for performing the steps of] method comprising:

processing the incoming call comprising establishing a link with the user telephone; and

generating a ring signal at the user telephone.

33. (Amended) The [computer-readable medium] computer program product of claim 28 wherein the user-selectable criteria indicates no permission to process the incoming call, the [computer-readable medium containing computer-executable instructions for performing the steps of] method further comprising

processing the incoming call comprising blocking the incoming call; and

not generating a ring signal at the user telephone.

34. (Amended) The [computer-readable medium] computer program product of claim [35] 33, further comprising [computer-executable instructions for performing the step of] generating a busy signal at an origination telephone from which the incoming call is originated.

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35. (Amended) The [computer-readable medium] computer program product of claim 34, further comprising [computer-executable instructions for performing the steps] playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone.

36. (Amended) The [computer-readable medium] computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the [computer-readable medium containing computer-executable instructions for performing the steps of] method further comprising:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone[,]; and

blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

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37. (Amended) The [computer-readable medium] computer program product of claim 28 wherein the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the [computer-readable medium containing computer-executable instructions for performing the steps for] method further comprising:

accessing the data structure using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data; and [the]

processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

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38. (Amended) In a system including a telephone network and a computer network where an originating telephone connects with a user telephone over the telephone network, a [A] method for processing a call from the originating telephone to the user telephone according to user specifications, [user specification of call processing in a telephone network having a user telephone coupled to the telephone network,] the method comprising:

accepting an incoming call designated for the user telephone from an originating telephone of a subscriber;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call of the subscriber in accordance with the user-selectable criteria.

39. (Amended) The method of claim 38, further comprising generating call processing rules based on the user-selectable criteria and storing the call processing rules on the computer network in association with a caller list that is associated with the data structure.



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43. (Amended) The method of claim 38 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, wherein accessing a data structure further comprises [the access of the data structure] using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

44. (Amended) The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call, [the] wherein processing the incoming call further comprises [comprising] establishing a link with the user telephone and generating a ring signal at the user telephone.

45. (Amended) The method of claim 38 wherein the user-selectable criteria indicates no permission to process the incoming call, wherein [the] processing the incoming call further comprises [comprising] blocking the incoming call and not generating a ring signal at the user telephone.



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48. (Amended) The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, wherein [the] processing the incoming call further comprises: [comprising]

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone[.]; [and]

blocking the incoming call; and

not generating a ring signal at the user telephone during time periods other than the user-selected time period.

49. (Amended) The method of claim 38 wherein the data structure comprises a plurality of data substructures each storing caller identification and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, wherein [the] accessing the data structure further comprises using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and [the] processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

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50. (Amended) The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, wherein [the] processing the incoming call further comprises [comprising] signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

51. (Amended) The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, wherein [the] processing the incoming call further comprises [comprising] not establishing a communication link with the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.